APPENDIX A

INTERIM REPORT ON TASK 1

PACIFIC MISSILE RANGE FACILITY
COMBINED HEAT AND POWER FEASIBILITY STUDY

INTERIM REPORT ON TASK 1

Prepared For:

County of Kauai
Office of Economic Development
Kauai, Hawaii

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PACIFIC MISSILE RANGE FACILITY
COMBINED HEAT AND POWER FEASIBILITY STUDY

INTERIM REPORT ON TASK 1

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SECTION 1

INTRODUCTION

The County of Kauai Office of Economic Development engaged SCS Energy (SCS) to conduct a combined heat and power feasibility study for the Pacific Missile Range Facility (PMRF). Task 1 of the work plan for this study calls for:

- Characterization of the quality of the landfill gas in the Phase I Landfill;
- Comparison of the Phase I Landfill's landfill gas characteristics to the Phase II Landfill's landfill gas characteristics, based on information already available for the Phase II Landfill;
- Projections of recoverable landfill gas from the Phase I and Phase II Landfills;
- Preparation of design and cost estimates for landfill gas collection, landfill gas processing and landfill gas conveyance piping (to PMRF); and
- Recommendations on the fair market price of the landfill gas.

SCS's agreement with the County requires that a report on SCS's Phase I work be completed, and that a Phase I report be issued, by March 31, 2006. It is the purpose of this report to satisfy that requirement.

A report on SCS's work under subsequent tasks, authorized by the agreement, is due on October 31, 2006.

SECTION 2

LANDFILL GAS SAMPLING OF PHASE I LANDFILL

The Phase I Landfill is closed. Installation of a geomembrane cover, and a network of landfill gas vents, was completed in February 1995. Twenty-five (25) vents were installed. The location of the vents, and details on the design of the vents, can be found on construction completion drawings in Appendix A. The construction completion drawings were prepared by Harding Lawson Associates (HLA).

The vents are connected to landfill gas collection piping located immediately below the geomembrane cover. The purpose of the vents and collection piping are to prevent the buildup of gas pressure below the geomembrane. The vents extend about ten feet above the surface of the landfill. Each vent was equipped with a gas monitoring port about four feet above the base of the vent. The gas monitoring port is equipped with a lab cock type valve.

It was agreed at the outset of this study that landfill gas samples would be drawn from the vents, and that the geomembrane cover would not be disturbed.

SCS executed a landfill gas sampling and analysis program on January 10 and 11, 2006. SCS selected ten (10) spatially dispersed vents for sampling. The vents selected for sampling were numbered 2, 6, 9, 11, 14, 16, 18, 20, 21 and 23 on the HLA construction completion drawings. A drawing locating these vents can be found in Appendix A.

On the morning of January 10, SCS covered the outlets of each of the vents, with plastic bags, and sealed the outlets with duct tape. In the afternoon, SCS commenced sampling and analysis.

A siloxane sample train was installed, and placed in operation, on Vent No. 14 and on Vent No. 21 at about 2:00 p.m. and 2:15 p.m., respectively. The methanol impinger sampling method was employed. Under this method, a sample pump continuously draws a fixed flow rate of gas through two, in-series, midget impingers for a duration of at least 180 minutes. The sample train operates unattended. SCS periodically confirmed that the trains were operating properly during their 180-minute sampling runs. The sampling train on Vent No. 14 operated for 210 minutes at a flow rate of 150 ml/min, processing a gas sample volume of 31.5 liters. The sampling train on Vent No. 21 operated for 194 minutes at 150 ml/min, processing 29.1 liters. At the conclusion of the sampling runs, the methanol vials were capped and secured in packaging provided by Air Toxics, Ltd., the analytical laboratory selected for analyzing the samples.

After activating the methanol impinger sampling trains, SCS proceeded to take gas composition readings of gas drawn from the sample ports at all ten of the vents. Vent Nos. 14 and 21 were read after the methanol impinger sample train was removed. Table No. 2-2 summarizes the landfill gas composition data obtained in the field. A Landtec GEM-2000 was used to determine

methane (CH_4), carbon dioxide (CO_2) and oxygen (O_2) levels. The GEM is equipped with its own internal electric drive sampling pump. Gas was drawn through the GEM-2000 until a stable reading was obtained. Prior to engaging the sampling pump, the GEM-2000 was used to measure static pressure in the vent. A Drager tube apparatus was used to take a hydrogen sulfide (H_2S) reading after the GEM-2000 sample was taken. The Drager tube uses a hand pump, and it uses a colorimetric method to determine H_2S concentration.

Field instruments such as the GEM-2000 and the Drager tube apparatus are reasonably accurate; however, they are more susceptible to interference than laboratory analyses. The GEM-2000 sometimes shows high CH_4 readings, when small quantities of higher molecular weight hydrocarbons are present. In general, the maximum methane percentage found in landfill gas is in the vicinity of 60 percent. As seen on Table No. 2-2, several vents showed very high methane percentages -- specifically, Vent Nos. 2, 9, 14 and 18. The GEM-2000 incorporates separate analyzers for CH_4, CO_2 and O_2; however, the low CO_2 readings in these vents do not corroborate the high CH_4 readings, since the internal logic of the GEM-2000 suppresses the reported CO_2 reading to prevent the three gases from reporting over 100 percent in total. In reviewing Table No. 2-2, it will be noted that $CH_4 + CO_2 + O_2$ is less than 100 percent in most cases. This is to be expected. It is assumed in the landfill gas industry that the remaining fraction is nitrogen (N_2). The source of the N_2, like the O_2, is air.

At nine (9) of the ten (10) vents, samples of landfill gas were drawn into Tedlar bags using a sample pump. A one (1) liter, a three (3) liter or a five (5) liter bag was used, depending on the type and number of laboratory analyses desired. Table No. 2-1 is a matrix which identifies the vents selected for bag samples and identifies the laboratory tests that SCS intended to run.

The standard principal gas test reports out CH_4, CO_2, O_2, N_2 and twelve other compounds which are generally not present in landfill gas. The principal gas test is a cross-check of the GEM-2000 reading. Laboratory results are more accurate than the GEM-2000 readings. The laboratory reported that the bag from Vent No. 21 appeared to have developed a leak in transit. The laboratory results from Vent No. 21 will be considered invalid.

The sulfur test is a test for nineteen sulfur bearing compounds, in addition to H_2S. Normally, hydrogen sulfide is responsible for more than 85 percent of all sulfur present in landfill gas. The laboratory test for sulfur provides a cross-check on the Drager tube apparatus results, and is used to confirm that atypical sulfur compounds are not present.

Table No. 2-3 summarizes the laboratory results for the principal gases, sulfur and siloxane. The full laboratory reports can be found in Appendix B.

The following conclusions can be reached, based on the sampling and analysis work on the Phase I Landfill:

- The average methane content of the landfill gas in the Phase I Landfill was 58 percent,

based on the laboratory results. A methane content of 58 percent is typical for raw landfill gas. Two of the vents had methane contents over 60 percent. While atypical, the readings are not a cause for concern. As suspected, the GEM 2000 reported out erroneously high readings for many of the vents;

- Hydrogen sulfide is virtually not present;
- Siloxane was below limits of detection;
- NMOCs and halogenated compounds are present in very low concentrations; and
- All of the vents were under slight positive pressure.

At least some landfill gas is present in the Phase I Landfill, and it is relatively free of any compounds that could be deleterious to boilers or electric power generation equipment.

TABLE NO. 2-1
KEKAHA LANDFILL PHASE I
SAMPLING/ANALYSIS MATRIX

Vent No.	Field Work			Laboratory Work			
	GEM	Drager	Bag Sample	Principal Gases	TO-15	Sulfur	Siloxanes
2	Y	Y	Y		X		
6	Y	Y	Y	X			
9	Y	Y	Y	X	X	X	
11	Y	Y	N				
14	Y	Y	Y	X	X		X
16	Y	Y	Y	X			
18	Y	Y	Y	X	X	X	
20	Y	Y	Y		X		
21	Y	Y	Y	X	X	X	X
23	Y	Y	Y	X			

TABLE NO. 2-2
KEKAHA LANDFILL PHASE I
SUMMARY OF FIELD COLLECTED DATA

Vent No.	Time	CH_4	CO_2	O_2	H_2S (ppmv)	Pressure (in. w.c.)	Comments
2	4:40 p.m.	94.2%	5.2%	0.5%	<2	+0.070	01/10/06. Methane value suspect
6	4:25 p.m.	65.8%	29.5%	0.7%	<2	+0.050	01/10/06
9	4:45 p.m.	96.6%	2.7%	0.6%	<2	+1.150	01/10/06. Methane value suspect
11	4:55 p.m.	65.2%	26.6%	0.7%	<2	+0.000	01/10/06
14	5:15 p.m.	81.8%	17.5%	0.6%	<2	+0.200	01/10/06. Methane value suspect
16	5:05 p.m.	54.9%	24.8%	1.8%	<2	+0.180	01/10/06
18	4:05 p.m.	97.5%	2.0%	0.5%	<2	+0.125	01/10/06. Methane value suspect
20	3:55 p.m.	70.8%	23.5%	0.9%	<2	+0.065	01/10/06
21	5:25 p.m.	68.7%	24.4%	0.4%	<2	+0.002	01/10/06
23	3:38 p.m.	51.5%	24.1%	0.7%	<2	+0.022	01/10/06
14	11:00 a.m.	86.5%	12.8%	0.7%	NA	+0.110	Repeat of 01/10/06 on 01/11/06.
21	10:45 a.m.	67.3%	67.3%	2.1%	NA	+0.085	Repeat of 01/10/06 on 01/11/06.

TABLE NO. 2-3
KEKAHA LANDFILL PHASE I
LABORATORY RESULTS FOR PRINCIPAL GASES,
SULFUR AND SILOXANES

Vent No.	Principal Gases (%)				Sulfur (ppm)		Siloxanes
	CH_4	CO_2	O_2	N_2	H_2S	Other	
2	-	-	-	-	-	-	-
6	60%	27%	0.9%	14%	-	-	-
9	73%	24%	0.5%	4.9%	ND	0.07	-
11	-	-	-	-	-	-	-
14	48%	20%	6.5%	27%	-	-	ND
16	56%	24%	1.6%	20%	-	-	-
18	74%	20%	0.4%	7.1%	0.07	0.05	-
20	-	-	-	-	-	-	-
21	9%	3.8%	18%	68%	ND	0.03	ND
23	37%	17%	6.9%	40%	-	-	
Average	58%	22%	2.8%	18.8%			

Notes:
1) Sample bag for Vent No. 21 was damaged during shipping. Results are impacted by dilution by air and are invalid.
2) Average excludes Vent No. 21.

SECTION 3

LANDFILL GAS SAMPLING OF PHASE II LANDFILL

The Phase II Landfill is currently open. A landfill gas sampling program was undertaken at the Phase II Landfill by Earth Tech in January/February 2005, and the results were summarized in a report prepared by Earth Tech dated March 8, 2005.

On January 26, 2005, Earth Tech installed two direct push borings in the southeastern corner of the Phase II Landfill. The borings were installed to a depth of about 30 feet below the surface of the landfill. The borings were designated DP-1 and DP-2. The principal gases, based on laboratory analysis from gas samples drawn from the borings, were as follows:

Component	DP-1	DP-2
Methane	60%	39%
Carbon Dioxide	32%	28%
Nitrogen	7.4%	26%
Oxygen	2.0%	6.9%

Earth Tech opined that the DP-2 sample had been diluted by air. SCS agrees with that opinion.

Hydrogen sulfide in DP-1 and DP-2 was 7.8 ppmv and 0.3 ppmv, respectively. Siloxanes were at non-detect levels in DP-2. DP-1 was not tested for siloxane.

The landfill gas from both DP-1 and DP-2 were analyzed for trace quantities of volatile organic compounds (VOCs) using Modified EPA Method TO-14A. Modified EPA Method TO-14A uses a target compound list and analytical methods identical to EPA Method TO-15 (the method employed by SCS). Based on the chlorine and fluorine present in the compounds actually detected, the concentration of halogenated compounds is well below levels of concern to landfill gas to energy equipment.

SCS and Earth Tech used the same laboratory, Air Toxics, Ltd. of Folsom, California, for all of their analytical work.

The analytical work undertaken on the Phase II Landfill was very limited, and may not be representative of the entire refuse mass in the Phase II Landfill. The Phase II analytical shows:

- A methane percentage consistent with what would be expected for a landfill with active anaerobic decomposition of waste, with no evidence of aerobic decomposition;
- A landfill gas with very low H_2S levels;

- A landfill gas with low halogenated compound content; and
- A landfill gas with low siloxane content.

While SCS feels that a more comprehensive sampling program on the Phase II Landfill might produce higher H_2S, halogen and siloxane levels, it is unlikely that these parameters would prove to be greater than those for a typical active landfill.

Based on available information, for the Phase II Landfill, the landfill gas is relatively free from any compounds that could be deleterious to boilers or electric power generation equipment. The same conclusion was reached, in Section 2, about the landfill gas from the Phase I Landfill.

SECTION 4

LANDFILL GAS RECOVERY PROJECTION

Waste Filling History and Future Projection

The two most important factors affecting landfill gas generation are: 1) the tons of waste in place; and 2) the age of the waste. In order to run a landfill gas generation model, it is necessary to have, or to reconstruct, a waste disposal history and to make a future waste disposal projection.

The Kekaha Landfill consists of two phases. Phase I is a closed site. Phase II is currently open. The County estimates that a total of 601,000 tons of waste were disposed of in Phase I. The estimate is based on work undertaken when the Closure/Post-Closure Plan for Phase I was prepared. The estimate was based on a volumetric determination of the refuse mass, plus assumptions on in-place waste density. The number of tons disposed of in Phase I in any particular year is not known. Phase I operated from 1953 to October 8, 1993. A reconstruction of Phase I's waste disposal history was made by SCS and the result of that reconstruction is summarized on Table No. 4-1. Key assumptions and clarifications on Table No. 4-1 are as follows:

- The County accounts for waste disposal on an operating year basis, rather than on a calendar year basis. The operating year is July through June. Hence, the waste tonnage shown on Table No. 4-1 for 1994 is actually waste disposed of in July 1993 through October 1993;
- The annual waste tonnages for 1994 forward is actually known for Phase II. There was a surge in waste disposal after Hurricane Iniki (September 11, 1992). A pre-hurricane waste disposal rate of 50,000 tons per year seems reasonable, given the return to non-hurricane impacted waste disposal rates in subsequent years;
- Waste disposal rates were arbitrarily decreased (generally about ten percent per year) from 1992 backward until the 601,000 tons were exhausted. The waste was exhausted in 1970; and
- While the above is inconsistent with the statement that the landfill was open since 1953, it is doubtful that much pre-1970 waste would have contributed to the landfill volume calculated for the Closure/Post-Closure Plan.

The waste placement reconstruction on Table No. 4-1 is certainly not accurate, but is an acceptable estimate for purposes of modeling landfill gas generation at this site. The quantity of landfill gas generated by Phase I is significantly less than that from Phase II, and the quantity is

declining each year. Any error in the Phase I landfill gas generation projection becomes increasingly less important each year.

The County supplied SCS with actual waste disposal tonnages at the Phase II Landfill through June 2005. Those tonnages are shown on Table No. 4-2. The currently permitted capacity of Phase II, including the recently improved vertical expansion to 85 feet MSL, is 1,467,260 tons. SCS escalated the 2005 waste disposal rate by 3.5 percent per year, resulting in a forecasted closure year of 2009. The County concurs that 2009 is the likely closure year.

After Phase II is filled, the County hopes to secure approval of at least one horizontal expansion. Table No. 4-3 continues to escalate the waste disposal rate at 3.5 percent per year, and presumes that the expansion area will be open for seven years through 2016. An expansion beyond 2016 is more speculative than the expansion in 2009. Expansions beyond 2016 will not be considered herein, but they are possible.

Table No. 4-4 aggregates Phases I and II and Table No. 4-5 aggregates Phases I, II and III.

Landfill Gas Collection System Coverage

Projecting landfill gas collection system coverage is an important aspect of landfill gas recovery modeling. For purposes of a landfill gas to energy (LFGE) project, the quantity of landfill gas generated is irrelevant. The quantity of landfill gas which is actually recovered is what is important. When a landfill is active, it is difficult to maximize landfill gas recovery due to conflicts with ongoing waste disposal. The following assumptions were made with respect to wellfield coverage:

- Phase I can immediately achieve 100 percent coverage when the landfill gas collection system is installed. The assumed installation year is 2007;
- Phase II can achieve 70 percent coverage in 2007 through the installation of landfill gas extraction wells on the bench road around the landfill, and perhaps a few top deck wells. Wellfield coverage will increase to 100 percent in 2010, after closure, through the installation of the remaining top deck wells; and
- Phase III will begin with 70 percent coverage shortly after it opens, and will reach 100 percent coverage after closure. A wellfield plan will not be laid out for Phase III since the physical configuration of Phase III is currently unknown. Horizontal collectors will probably be used in Phase III to temporarily allow landfill gas to be collected contemporaneously with waste filling. Vertical extraction wells would probably be installed after closure.

Table Nos. 4-1 through 4-5 reflect the above assumptions.

Landfill Gas Recovery Projection

SCS employs a first-order landfill gas recovery model which uses the same algorithm as USEPA's LandGEM Model. SCS's model differs from the USEPA model in two ways:

1) SCS projects recoverable landfill gas, rather than landfill gas generation. It predicts how much landfill gas can be recovered at a landfill if a comprehensive, well-operated landfill gas collection system was in place; and
2) SCS uses its own model coefficients (L_o and k), rather than using the USEPA default values. SCS's coefficients were derived, and continue to be refined, using a database of 170 operating landfill gas collection systems, which represent over 1,000 years of data.

For the Kekaha Landfill, SCS has selected a k of 0.038 and an L_o of 2,800 ft^3/ton. The coefficient k determines the rate of decline in landfill gas production. The coefficient L_o is the ultimate generation rate. It indicates the maximum long-term yield of recoverable landfill gas per ton of waste.

Table Nos. 4-1 through 4-5 and Figure No. 4-1 summarize SCS's projection of recoverable landfill gas for Kekaha Landfill. Initial landfill gas recovery is expected to be 400 scfm, gradually increasing to over 700 scfm at closure. A flow of 400 scfm at 50 percent methane is equivalent to 12.0 mmBtu/hr, and could support about 1,100 kW of electric power production capacity.

TABLE NO. 4-1
LFG RECOVERY PROJECTION -- PHASE I AREA
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
1970	4,300	4,300	0	0.00	0	0%	0	0.00	0
1971	4,800	9,100	2	0.00	463	0%	0	0.00	0
1972	5,300	14,400	4	0.01	963	0%	0	0.00	0
1973	5,900	20,300	6	0.01	1,497	0%	0	0.00	0
1974	6,500	26,800	8	0.01	2,077	0%	0	0.00	0
1975	7,000	33,800	10	0.01	2,699	0%	0	0.00	0
1976	8,000	41,800	13	0.02	3,352	0%	0	0.00	0
1977	9,000	50,800	15	0.02	4,089	0%	0	0.00	0
1978	10,000	60,800	18	0.03	4,905	0%	0	0.00	0
1979	11,000	71,800	22	0.03	5,799	0%	0	0.00	0
1980	12,200	84,000	25	0.04	6,768	0%	0	0.00	0
1981	13,600	97,600	29	0.04	7,829	0%	0	0.00	0
1982	15,100	112,700	34	0.05	9,001	0%	0	0.00	0
1983	16,800	129,500	39	0.06	10,292	0%	0	0.00	0
1984	18,600	148,100	44	0.06	11,717	0%	0	0.00	0
1985	20,700	168,800	50	0.07	13,283	0%	0	0.00	0
1986	23,000	191,800	56	0.08	15,016	0%	0	0.00	0
1987	25,600	217,400	64	0.09	16,933	0%	0	0.00	0
1988	28,400	245,800	72	0.10	19,058	0%	0	0.00	0
1989	32,000	277,800	80	0.12	21,406	0%	0	0.00	0
1990	35,000	312,800	90	0.13	24,053	0%	0	0.00	0
1991	45,000	357,800	101	0.15	26,925	0%	0	0.00	0
1992	50,000	407,800	116	0.17	30,766	0%	0	0.00	0
1993	150,000	557,800	132	0.19	35,003	0%	0	0.00	0
1994	43,200	601,000	187	0.27	49,849	0%	0	0.00	0
1995	0	601,000	198	0.29	52,642	0%	0	0.00	0
1996	0	601,000	191	0.27	50,679	0%	0	0.00	0
1997	0	601,000	183	0.26	48,790	0%	0	0.00	0
1998	0	601,000	177	0.25	46,971	0%	0	0.00	0
1999	0	601,000	170	0.24	45,219	0%	0	0.00	0
2000	0	601,000	164	0.24	43,533	0%	0	0.00	0
2001	0	601,000	158	0.23	41,910	0%	0	0.00	0
2002	0	601,000	152	0.22	40,347	0%	0	0.00	0
2003	0	601,000	146	0.21	38,843	0%	0	0.00	0
2004	0	601,000	141	0.20	37,394	0%	0	0.00	0
2005	0	601,000	135	0.19	36,000	0%	0	0.00	0
2006	0	601,000	130	0.19	34,658	0%	0	0.00	0
2007	0	601,000	125	0.18	33,365	100%	125	0.18	33,365

TABLE NO. 4-1 (continued...)
LFG RECOVERY PROJECTION -- PHASE I AREA
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
2008	0	601,000	121	0.17	32,121	100%	121	0.17	32,121
2009	0	601,000	116	0.17	30,924	100%	116	0.17	30,924
2010	0	601,000	112	0.16	29,771	100%	112	0.16	29,771
2011	0	601,000	108	0.16	28,661	100%	108	0.16	28,661
2012	0	601,000	104	0.15	27,592	100%	104	0.15	27,592
2013	0	601,000	100	0.14	26,563	100%	100	0.14	26,563
2014	0	601,000	96	0.14	25,573	100%	96	0.14	25,573
2015	0	601,000	93	0.13	24,619	100%	93	0.13	24,619
2016	0	601,000	89	0.13	23,701	100%	89	0.13	23,701
2017	0	601,000	86	0.12	22,817	100%	86	0.12	22,817
2018	0	601,000	83	0.12	21,967	100%	83	0.12	21,967
2019	0	601,000	80	0.11	21,147	100%	80	0.11	21,147
2020	0	601,000	77	0.11	20,359	100%	77	0.11	20,359
2021	0	601,000	74	0.11	19,600	100%	74	0.11	19,600
2022	0	601,000	71	0.10	18,869	100%	71	0.10	18,869
2023	0	601,000	68	0.10	18,165	100%	68	0.10	18,165
2024	0	601,000	66	0.09	17,488	100%	66	0.09	17,488
2025	0	601,000	63	0.09	16,836	100%	63	0.09	16,836
2026	0	601,000	61	0.09	16,208	100%	61	0.09	16,208
2027	0	601,000	59	0.08	15,604	100%	59	0.08	15,604
2028	0	601,000	56	0.08	15,022	100%	56	0.08	15,022
2029	0	601,000	54	0.08	14,462	100%	54	0.08	14,462
2030	0	601,000	52	0.08	13,923	100%	52	0.08	13,923

Methane Content of LFG Adjusted to:	50%	
Selected Decay Rate Constant (k):	0.0380	
Selected Ultimate Methane Recovery Rate (Lo):	2,800	cu ft/ton

TABLE NO. 4-2
LFG RECOVERY PROJECTION -- PHASE II AREA
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
1994	85,600	85,600	0	0.00	0	0%	0	0.00	0
1995	125,700	211,300	35	0.05	9,217	0%	0	0.00	0
1996	216,700	428,000	84	0.12	22,408	0%	0	0.00	0
1997	93,300	521,300	169	0.24	44,906	0%	0	0.00	0
1998	64,300	585,600	200	0.29	53,278	0%	0	0.00	0
1999	67,600	653,200	219	0.32	58,215	0%	0	0.00	0
2000	72,800	726,000	238	0.34	63,324	0%	0	0.00	0
2001	77,200	803,200	259	0.37	68,801	0%	0	0.00	0
2002	74,700	877,900	280	0.40	74,549	0%	0	0.00	0
2003	81,100	959,000	300	0.43	79,812	0%	0	0.00	0
2004	86,500	1,045,500	322	0.46	85,569	0%	0	0.00	0
2005	89,200	1,134,700	345	0.50	91,692	0%	0	0.00	0
2006	92,320	1,227,020	368	0.53	97,878	0%	0	0.00	0
2007	95,550	1,322,570	392	0.56	104,169	70%	274	0.39	72,919
2008	98,890	1,421,460	416	0.60	110,574	70%	291	0.42	77,402
2009	45,800	1,467,260	440	0.63	117,099	70%	308	0.44	81,969
2010	0	1,467,260	442	0.64	117,664	100%	442	0.64	117,664
2011	0	1,467,260	426	0.61	113,277	100%	426	0.61	113,277
2012	0	1,467,260	410	0.59	109,053	100%	410	0.59	109,053
2013	0	1,467,260	395	0.57	104,987	100%	395	0.57	104,987
2014	0	1,467,260	380	0.55	101,072	100%	380	0.55	101,072
2015	0	1,467,260	366	0.53	97,303	100%	366	0.53	97,303
2016	0	1,467,260	352	0.51	93,675	100%	352	0.51	93,675
2017	0	1,467,260	339	0.49	90,182	100%	339	0.49	90,182
2018	0	1,467,260	326	0.47	86,820	100%	326	0.47	86,820
2019	0	1,467,260	314	0.45	83,583	100%	314	0.45	83,583
2020	0	1,467,260	303	0.44	80,466	100%	303	0.44	80,466
2021	0	1,467,260	291	0.42	77,466	100%	291	0.42	77,466
2022	0	1,467,260	280	0.40	74,577	100%	280	0.40	74,577
2023	0	1,467,260	270	0.39	71,796	100%	270	0.39	71,796
2024	0	1,467,260	260	0.37	69,119	100%	260	0.37	69,119
2025	0	1,467,260	250	0.36	66,542	100%	250	0.36	66,542
2026	0	1,467,260	241	0.35	64,061	100%	241	0.35	64,061
2027	0	1,467,260	232	0.33	61,672	100%	232	0.33	61,672
2028	0	1,467,260	223	0.32	59,373	100%	223	0.32	59,373
2029	0	1,467,260	215	0.31	57,159	100%	215	0.31	57,159
2030	0	1,467,260	207	0.30	55,028	100%	207	0.30	55,028

Methane Content of LFG Adjusted to:	50%	
Selected Decay Rate Constant (k):	0.0380	
Selected Ultimate Methane Recovery Rate (Lo):	2,800	cu ft/ton

TABLE NO. 4-3
LFG RECOVERY PROJECTION -- PHASE III AREA
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
2009	56,550	56,550	0	0.00	0	0%	0	0.00	0
2010	105,930	162,480	23	0.03	6,089	70%	16	0.02	4,262
2011	109,640	272,120	65	0.09	17,268	70%	45	0.07	12,088
2012	113,480	385,600	107	0.15	28,430	70%	75	0.11	19,901
2013	117,450	503,050	149	0.21	39,589	70%	104	0.15	27,712
2014	121,560	624,610	191	0.27	50,760	70%	134	0.19	35,532
2015	125,810	750,420	233	0.34	61,956	70%	163	0.23	43,369
2016	130,210	880,630	275	0.40	73,193	70%	193	0.28	51,235
2017	0	880,630	318	0.46	84,484	100%	318	0.46	84,484
2018	0	880,630	306	0.44	81,334	100%	306	0.44	81,334
2019	0	880,630	294	0.42	78,301	100%	294	0.42	78,301
2020	0	880,630	283	0.41	75,382	100%	283	0.41	75,382
2021	0	880,630	273	0.39	72,571	100%	273	0.39	72,571
2022	0	880,630	263	0.38	69,865	100%	263	0.38	69,865
2023	0	880,630	253	0.36	67,260	100%	253	0.36	67,260
2024	0	880,630	243	0.35	64,752	100%	243	0.35	64,752
2025	0	880,630	234	0.34	62,338	100%	234	0.34	62,338
2026	0	880,630	226	0.32	60,013	100%	226	0.32	60,013
2027	0	880,630	217	0.31	57,776	100%	217	0.31	57,776
2028	0	880,630	209	0.30	55,621	100%	209	0.30	55,621
2029	0	880,630	201	0.29	53,547	100%	201	0.29	53,547
2030	0	880,630	194	0.28	51,551	100%	194	0.28	51,551

Methane Content of LFG Adjusted to: 50%
Selected Decay Rate Constant (k): 0.0380
Selected Ultimate Methane Recovery Rate (Lo): 2,800 cu ft/ton

TABLE NO. 4-4
LFG RECOVERY PROJECTION -- PHASES I AND II COMBINED
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
1970	4,300	4,300	0	0.00	0	0%	0	0.00	0
1971	4,800	9,100	2	0.00	463	0%	0	0.00	0
1972	5,300	14,400	4	0.01	963	0%	0	0.00	0
1973	5,900	20,300	6	0.01	1,497	0%	0	0.00	0
1974	6,500	26,800	8	0.01	2,077	0%	0	0.00	0
1975	7,000	33,800	10	0.01	2,699	0%	0	0.00	0
1976	8,000	41,800	13	0.02	3,352	0%	0	0.00	0
1977	9,000	50,800	15	0.02	4,089	0%	0	0.00	0
1978	10,000	60,800	18	0.03	4,905	0%	0	0.00	0
1979	11,000	71,800	22	0.03	5,799	0%	0	0.00	0
1980	12,200	84,000	25	0.04	6,768	0%	0	0.00	0
1981	13,600	97,600	29	0.04	7,829	0%	0	0.00	0
1982	15,100	112,700	34	0.05	9,001	0%	0	0.00	0
1983	16,800	129,500	39	0.06	10,292	0%	0	0.00	0
1984	18,600	148,100	44	0.06	11,717	0%	0	0.00	0
1985	20,700	168,800	50	0.07	13,283	0%	0	0.00	0
1986	23,000	191,800	56	0.08	15,016	0%	0	0.00	0
1987	25,600	217,400	64	0.09	16,933	0%	0	0.00	0
1988	28,400	245,800	72	0.10	19,058	0%	0	0.00	0
1989	32,000	277,800	80	0.12	21,406	0%	0	0.00	0
1990	35,000	312,800	90	0.13	24,053	0%	0	0.00	0
1991	45,000	357,800	101	0.15	26,925	0%	0	0.00	0
1992	50,000	407,800	116	0.17	30,766	0%	0	0.00	0
1993	150,000	557,800	132	0.19	35,003	0%	0	0.00	0
1994	128,800	686,600	187	0.27	49,849	0%	0	0.00	0
1995	125,700	812,300	233	0.33	61,859	0%	0	0.00	0
1996	216,700	1,029,000	275	0.40	73,088	0%	0	0.00	0
1997	93,300	1,122,300	352	0.51	93,696	0%	0	0.00	0
1998	64,300	1,186,600	377	0.54	100,249	0%	0	0.00	0
1999	67,600	1,254,200	389	0.56	103,434	0%	0	0.00	0
2000	72,800	1,327,000	402	0.58	106,857	0%	0	0.00	0
2001	77,200	1,404,200	416	0.60	110,711	0%	0	0.00	0
2002	74,700	1,478,900	432	0.62	114,896	0%	0	0.00	0
2003	81,100	1,560,000	446	0.64	118,655	0%	0	0.00	0
2004	86,500	1,646,500	462	0.67	122,963	0%	0	0.00	0
2005	89,200	1,735,700	480	0.69	127,692	0%	0	0.00	0
2006	92,320	1,828,020	498	0.72	132,536	0%	0	0.00	0
2007	95,550	1,923,570	517	0.74	137,535	77%	400	0.58	106,284
2008	98,890	2,022,460	537	0.77	142,695	77%	412	0.59	109,523
2009	45,800	2,068,260	557	0.80	148,022	76%	424	0.61	112,893

TABLE NO. 4-4 (continued...)
LFG RECOVERY PROJECTION -- PHASES I AND II COMBINED
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
2010	0	2,068,260	554	0.80	147,435	100%	554	0.80	147,435
2011	0	2,068,260	534	0.77	141,937	100%	534	0.77	141,937
2012	0	2,068,260	514	0.74	136,645	100%	514	0.74	136,645
2013	0	2,068,260	495	0.71	131,550	100%	495	0.71	131,550
2014	0	2,068,260	476	0.69	126,645	100%	476	0.69	126,645
2015	0	2,068,260	458	0.66	121,923	100%	458	0.66	121,923
2016	0	2,068,260	441	0.64	117,376	100%	441	0.64	117,376
2017	0	2,068,260	425	0.61	113,000	100%	425	0.61	113,000
2018	0	2,068,260	409	0.59	108,786	100%	409	0.59	108,786
2019	0	2,068,260	394	0.57	104,730	100%	394	0.57	104,730
2020	0	2,068,260	379	0.55	100,825	100%	379	0.55	100,825
2021	0	2,068,260	365	0.53	97,065	100%	365	0.53	97,065
2022	0	2,068,260	351	0.51	93,446	100%	351	0.51	93,446
2023	0	2,068,260	338	0.49	89,962	100%	338	0.49	89,962
2024	0	2,068,260	326	0.47	86,607	100%	326	0.47	86,607
2025	0	2,068,260	314	0.45	83,378	100%	314	0.45	83,378
2026	0	2,068,260	302	0.43	80,269	100%	302	0.43	80,269
2027	0	2,068,260	291	0.42	77,276	100%	291	0.42	77,276
2028	0	2,068,260	280	0.40	74,395	100%	280	0.40	74,395
2029	0	2,068,260	269	0.39	71,621	100%	269	0.39	71,621
2030	0	2,068,260	259	0.37	68,950	100%	259	0.37	68,950

Methane Content of LFG Adjusted to:	50%	
Selected Decay Rate Constant (k):	0.0380	
Selected Ultimate Methane Recovery Rate (Lo):	2,800	cu ft/ton

TABLE NO. 4-5
LFG RECOVERY PROJECTION -- PHASES I - III COMBINED
KEKAHA LANDFILL, KAUAI, HAWAII

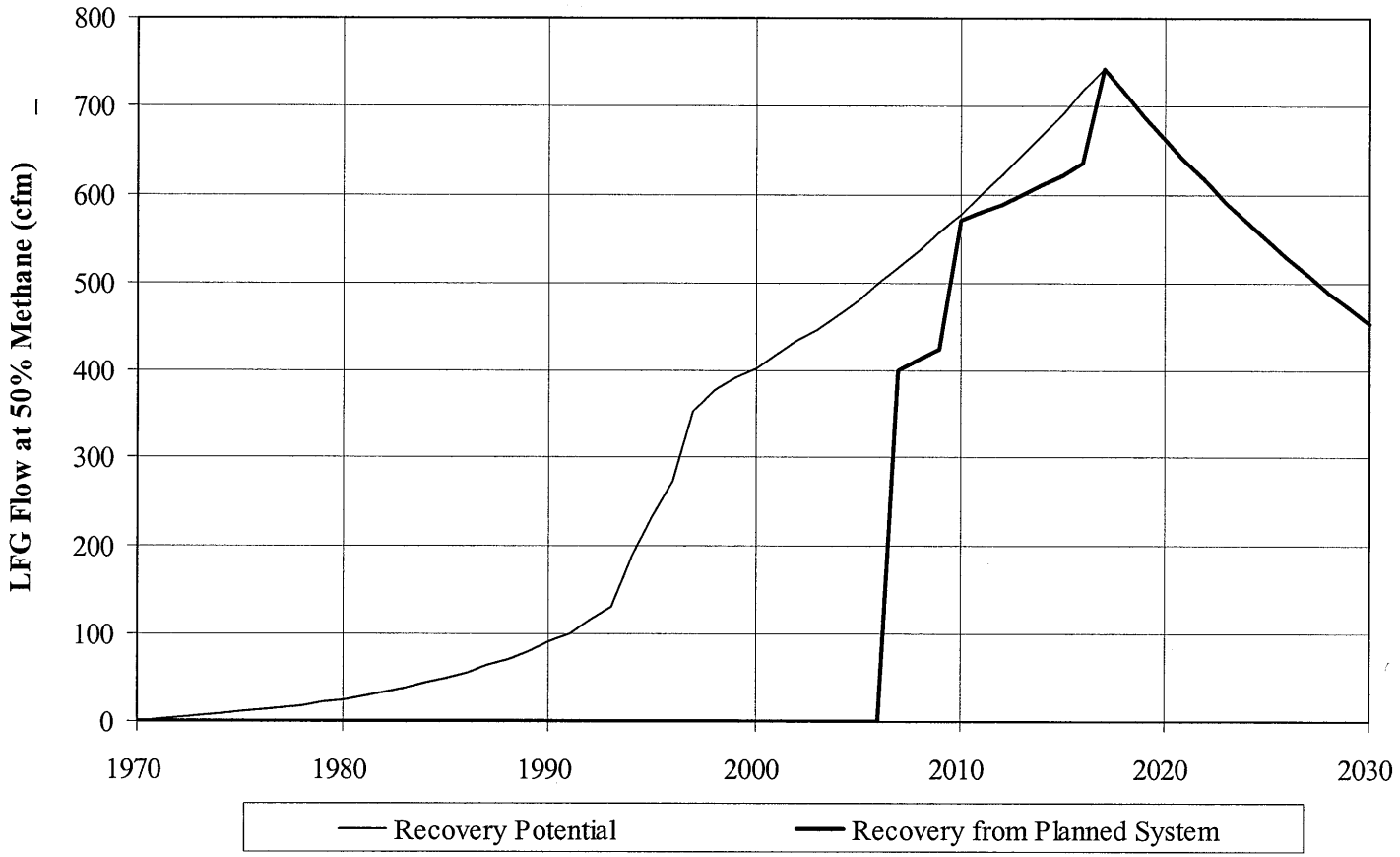
Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
1970	4,300	4,300	0	0.00	0	0%	0	0.00	0
1971	4,800	9,100	2	0.00	463	0%	0	0.00	0
1972	5,300	14,400	4	0.01	963	0%	0	0.00	0
1973	5,900	20,300	6	0.01	1,497	0%	0	0.00	0
1974	6,500	26,800	8	0.01	2,077	0%	0	0.00	0
1975	7,000	33,800	10	0.01	2,699	0%	0	0.00	0
1976	8,000	41,800	13	0.02	3,352	0%	0	0.00	0
1977	9,000	50,800	15	0.02	4,089	0%	0	0.00	0
1978	10,000	60,800	18	0.03	4,905	0%	0	0.00	0
1979	11,000	71,800	22	0.03	5,799	0%	0	0.00	0
1980	12,200	84,000	25	0.04	6,768	0%	0	0.00	0
1981	13,600	97,600	29	0.04	7,829	0%	0	0.00	0
1982	15,100	112,700	34	0.05	9,001	0%	0	0.00	0
1983	16,800	129,500	39	0.06	10,292	0%	0	0.00	0
1984	18,600	148,100	44	0.06	11,717	0%	0	0.00	0
1985	20,700	168,800	50	0.07	13,283	0%	0	0.00	0
1986	23,000	191,800	56	0.08	15,016	0%	0	0.00	0
1987	25,600	217,400	64	0.09	16,933	0%	0	0.00	0
1988	28,400	245,800	72	0.10	19,058	0%	0	0.00	0
1989	32,000	277,800	80	0.12	21,406	0%	0	0.00	0
1990	35,000	312,800	90	0.13	24,053	0%	0	0.00	0
1991	45,000	357,800	101	0.15	26,925	0%	0	0.00	0
1992	50,000	407,800	116	0.17	30,766	0%	0	0.00	0
1993	150,000	557,800	132	0.19	35,003	0%	0	0.00	0
1994	128,800	686,600	187	0.27	49,849	0%	0	0.00	0
1995	125,700	812,300	233	0.33	61,859	0%	0	0.00	0
1996	216,700	1,029,000	275	0.40	73,088	0%	0	0.00	0
1997	93,300	1,122,300	352	0.51	93,696	0%	0	0.00	0
1998	64,300	1,186,600	377	0.54	100,249	0%	0	0.00	0
1999	67,600	1,254,200	389	0.56	103,434	0%	0	0.00	0
2000	72,800	1,327,000	402	0.58	106,857	0%	0	0.00	0
2001	77,200	1,404,200	416	0.60	110,711	0%	0	0.00	0
2002	74,700	1,478,900	432	0.62	114,896	0%	0	0.00	0
2003	81,100	1,560,000	446	0.64	118,655	0%	0	0.00	0
2004	86,500	1,646,500	462	0.67	122,963	0%	0	0.00	0
2005	89,200	1,735,700	480	0.69	127,692	0%	0	0.00	0
2006	92,320	1,828,020	498	0.72	132,536	0%	0	0.00	0
2007	95,550	1,923,570	517	0.74	137,535	77%	400	0.58	106,284
2008	98,890	2,022,460	537	0.77	142,695	77%	412	0.59	109,523
2009	102,350	2,124,810	557	0.80	148,022	76%	424	0.61	112,893

TABLE NO. 4-5 (continued...)
LFG RECOVERY PROJECTION -- PHASES I - III COMBINED
KEKAHA LANDFILL, KAUAI, HAWAII

Year	Disposal Rate (tons/yr)	Refuse In-Place (tons)	LFG Recovery Potential (scfm)	(mmcf/day)	(mmBtu/yr)	LFG System Coverage (%)	LFG Recovery from Planned System (scfm)	(mmcf/day)	(mmBtu/yr)
2010	105,930	2,230,740	577	0.83	153,524	99%	570	0.82	151,697
2011	109,640	2,340,380	599	0.86	159,206	97%	579	0.83	154,025
2012	113,480	2,453,860	621	0.89	165,075	95%	589	0.85	156,546
2013	117,450	2,571,310	643	0.93	171,139	93%	599	0.86	159,262
2014	121,560	2,692,870	667	0.96	177,404	91%	610	0.88	162,176
2015	125,810	2,818,680	691	1.00	183,879	90%	622	0.89	165,292
2016	130,210	2,948,890	717	1.03	190,569	88%	634	0.91	168,611
2017	0	2,948,890	743	1.07	197,484	100%	743	1.07	197,484
2018	0	2,948,890	715	1.03	190,120	100%	715	1.03	190,120
2019	0	2,948,890	688	0.99	183,031	100%	688	0.99	183,031
2020	0	2,948,890	663	0.95	176,207	100%	663	0.95	176,207
2021	0	2,948,890	638	0.92	169,636	100%	638	0.92	169,636
2022	0	2,948,890	614	0.88	163,311	100%	614	0.88	163,311
2023	0	2,948,890	591	0.85	157,222	100%	591	0.85	157,222
2024	0	2,948,890	569	0.82	151,359	100%	569	0.82	151,359
2025	0	2,948,890	548	0.79	145,716	100%	548	0.79	145,716
2026	0	2,948,890	527	0.76	140,282	100%	527	0.76	140,282
2027	0	2,948,890	508	0.73	135,052	100%	508	0.73	135,052
2028	0	2,948,890	489	0.70	130,016	100%	489	0.70	130,016
2029	0	2,948,890	471	0.68	125,168	100%	471	0.68	125,168
2030	0	2,948,890	453	0.65	120,501	100%	453	0.65	120,501

Methane Content of LFG Adjusted to: 50%
Selected Decay Rate Constant (k): 0.0380
Selected Ultimate Methane Recovery Rate (Lo): 2,800 cu ft/ton

FIGURE NO. 4-1
LFG RECOVERY PROJECTION
KEKAHA LANDFILL, KAUAI, HAWAII



SECTION 5

LANDFILL GAS COLLECTION SYSTEM

Figure No. 5-1 presents a preliminary wellfield plan for Phase I. Nine vertical extraction wells would be installed. The average depth of the wells would be 30 feet deep. The well casings would be equipped with a geomembrane apron which would be welded to the existing geomembrane cover to preserve the existing watertight and airtight cover. The existing vents would remain, but would be capped. It is expected that the vacuum generated by the landfill gas extraction wells will have a large area of influence and prevent positive pressures from building up under the cover. If a positive pressure remains at any vent, that vent can be connected to the nearest landfill gas collection pipe via a small diameter pipe.

The landfill gas collection piping would be located on the surface of the landfill and could be HDPE or PVC pipe. The diameter of the pipe would be four inches in diameter throughout Phase I. A 4-inch diameter tie line to Phase II would also be installed.

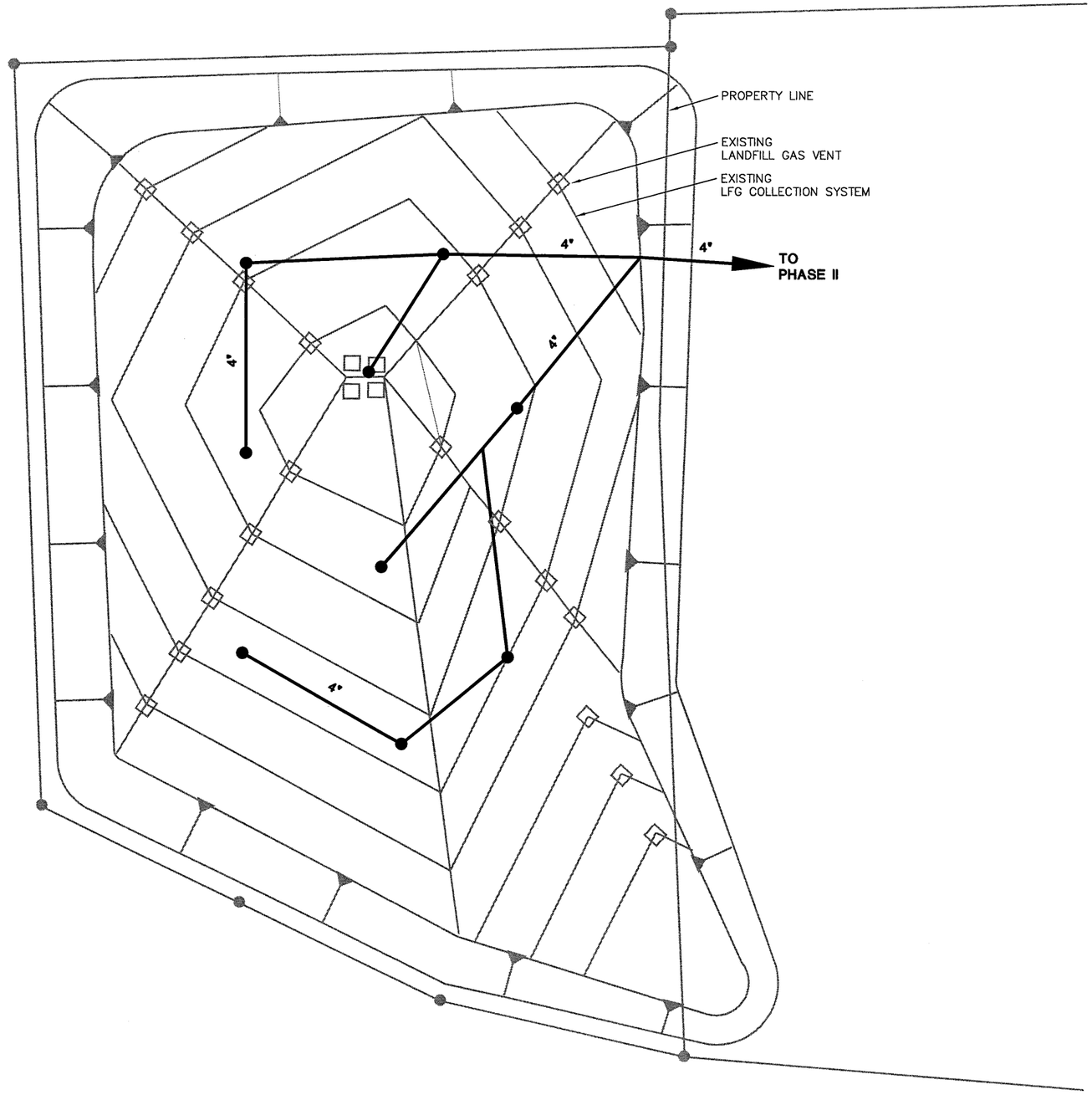
Figure No. 5-2 presents a preliminary wellfield plan for Phase II. Thirty vertical extraction wells would be installed. The bench road wells would average 35 feet deep. The top deck wells would average 60 feet deep.

The landfill gas collection piping would be HDPE or PVC pipe. The bench road piping would vary from eight inches to six inches in diameter. The lateral lines would be four inches in size.

A budget cost estimate for the landfill gas collection system can be found on Table No. 5-1. The budget cost estimate of $449,100 includes engineering, permitting, materials and installation for a distribution system from the Phase I and Phase II landfill's gas sources to the landfill property line.

TABLE NO. 5-1
BUDGET COST ESTIMATE FOR
PHASE I AND PHASE II
LANDFILL GAS COLLECTION SYSTEM

Component	Quantity	Unit Price	Extended Price
Wellheads	39	$600	$23,400
Well Aprons	9	$400	$3,600
Extraction Wells	2,310 feet	$90	$207,900
4-inch LFG Pipe	5,700 feet	$8	$45,600
6-inch LFG Pipe	1,900 feet	$10	$19,000
8-inch LFG Pipe	1,700 feet	$12	$20,400
Condensate Sumps	3	$12,000	$36,000
2-inch Condensate Pipe	2,800 feet	$3	$8,400
2-inch Air Pipe	2,800 feet	$3	$8,400
6-inch Transmission Line	200 feet	$32	$6,400
		Subtotal	**$379,100**
		Engineering	$30,000
		Contingency	$40,000
		Grand Total	**$449,100**



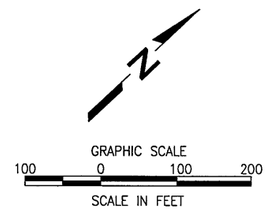


FIGURE 5-1

KEHAHA LANDFILL PHASE I
PROPOSED LANDFILL GAS COLLECTION SYSTEM

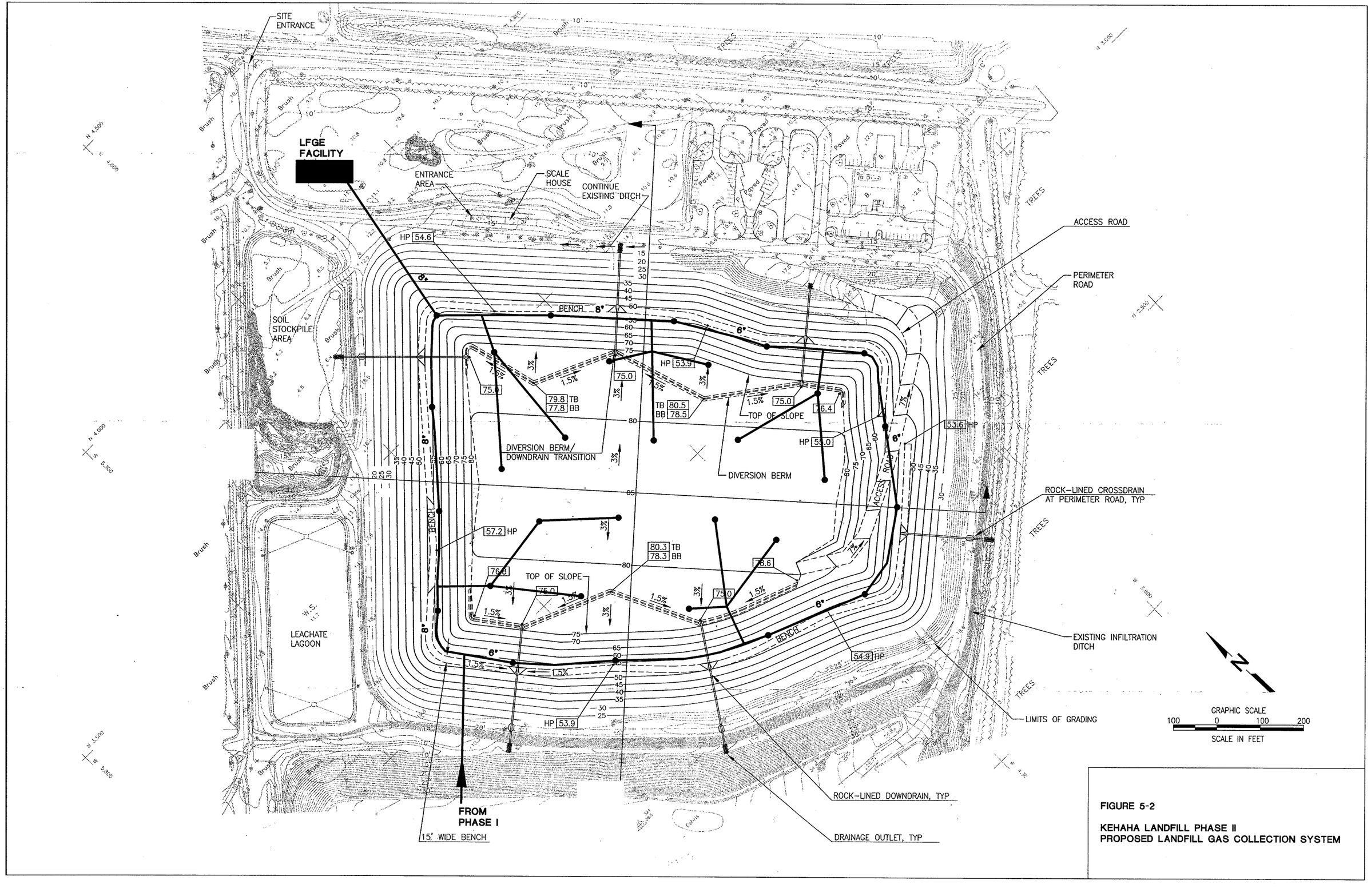


FIGURE 5-2

KEHAHA LANDFILL PHASE II
PROPOSED LANDFILL GAS COLLECTION SYSTEM

SECTION 6

LANDFILL GAS PROCESSING AND CONVEYANCE

As determined in Section 4, landfill gas recovery will vary from as low as 400 scfm to as high as 740 scfm. A maximum sustained recovery rate of 600 scfm (on a ten-year average basis) is expected. The distance to the power plant at PMRF is about 20,400 feet (3.9 miles). A 6-inch diameter, below-grade, HDPE pipe, operating at 80 psig at the landfill, would be employed to handle up to 600 scfm. The budget cost estimate for the landfill gas transmission line from the Kekaha Landfill property line to the existing PMRF power plant is $714,000. The budget cost for the landfill gas transmission line includes engineering, permitting, materials and installation. With respect to permitting, it has been assumed that National Environmental Policy Act (NEPA) requirements would be addressed by a NEPA category exclusion.

Landfill gas processing would be limited to compression, chilling to 45° F and reheating. A 600 scfm landfill gas processing skid would cost about $495,000 installed. The skid could be located in front of Phase II as shown on Figure No. 5-2, or at any other location which would not conflict with future horizontal expansions. Table No. 6-1 provides a budget cost estimate for the landfill gas processing skid.

For a reciprocating engine or boiler end use (at the end of pipeline) project, it will not be necessary to provide additional landfill gas treatment. In the case of reciprocating engines, it is a common practice to add relatively inexpensive coalescing-type filters just prior to the engines to provide added insurance of engine protection.

TABLE NO. 6-1
BUDGET COST ESTIMATE FOR
LANDFILL GAS PROCESSING SKID

Equipment	
Compressor	$110,000
Reheat Heat Exchanger	$15,000
Chilled Water Heat Exchanger	$15,000
Chiller	$30,000
Methane Analyzer	$20,000
Coalescing Filter	$5,000
Computer and PLC	$30,000
Power Distribution Panel	$15,000
On-Skid Installation	
Piping/Valves	$35,000
Electrical	$30,000
Other Fabrication Work	$35,000
Off-Skid Installation	
Foundation	$15,000
Fence	$10,000
Grading/Crushed Stone	$15,000
Rigging	$5,000
Electric Power Supply	$30,000
Piping Interconnection	$5,000
Engineering	$30,000
Contingency	$45,000
Total	**$495,000**

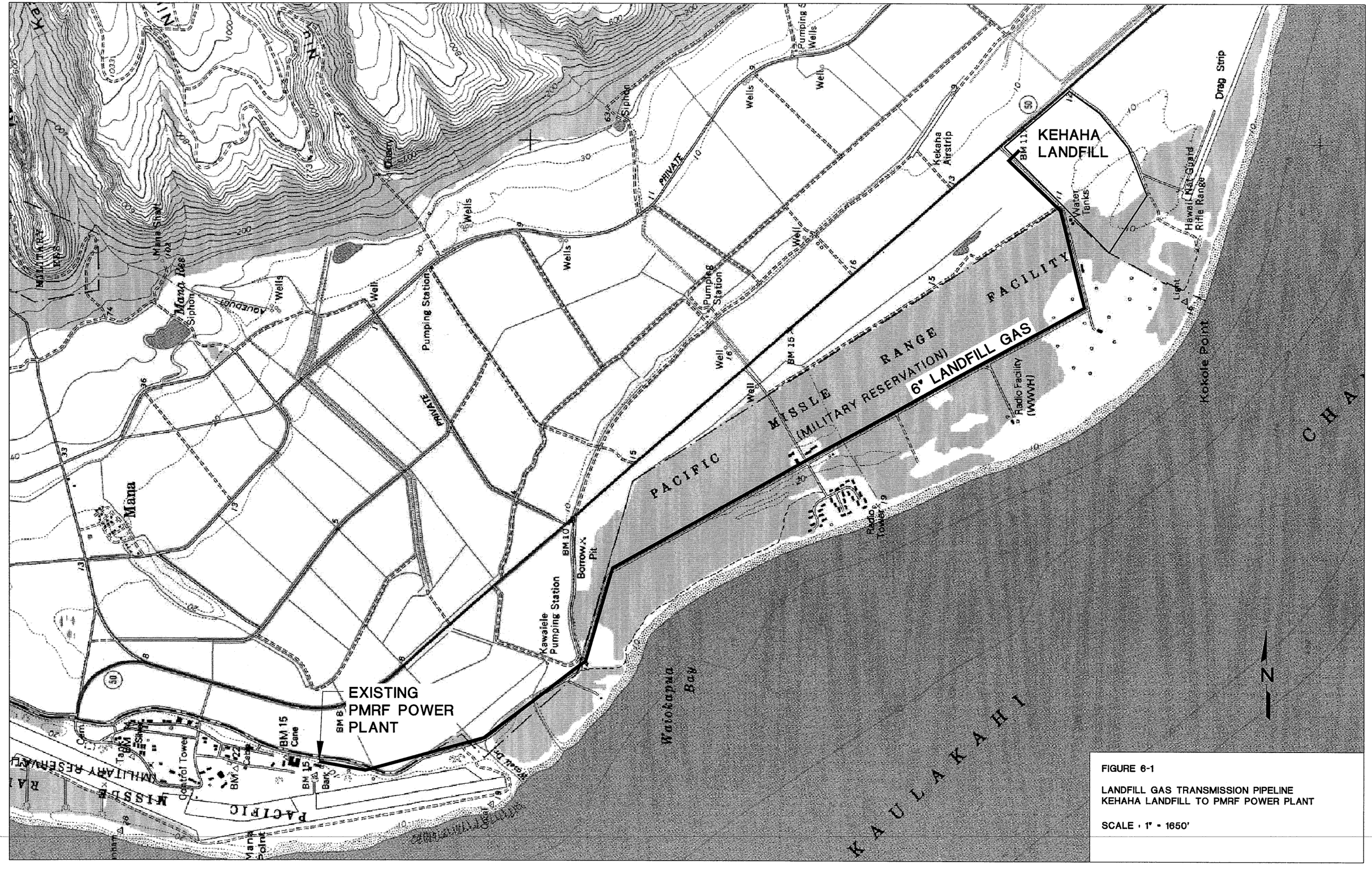


FIGURE 6-1

LANDFILL GAS TRANSMISSION PIPELINE
KEHAHA LANDFILL TO PMRF POWER PLANT

SCALE : 1" = 1650'

SECTION 7

LANDFILL GAS VALUE

The price paid to a landfill owner for landfill gas varies on a project-by-project basis. The price is negotiated case-by-case, and the price is directly related to what the LFGE project can afford to pay. The principal variables include:

- The value of the product sold to an end consumer ($/mmBtu for a gas sale or $/kWh for an electric power sale);
- The project-specific cost of the facilities necessary to convert landfill gas to a useable product;
- The quantity of landfill gas available; and
- Who covers the cost of wellfield installation and operation/maintenance.

At the present time, LFGE projects are virtually always installed at landfills that already have landfill gas collection systems in place. If the LFGE project is not developed by the landfill owner himself, and a project developer is used, project developers typically buy the landfill gas after collection at a flare station. In 2004, SCS conducted a survey of operating LFGE projects in California and determined that the average price being paid for landfill gas by developers was $0.60/mmBtu with a range from $0.25/mmBtu to $1.25/mmBtu.

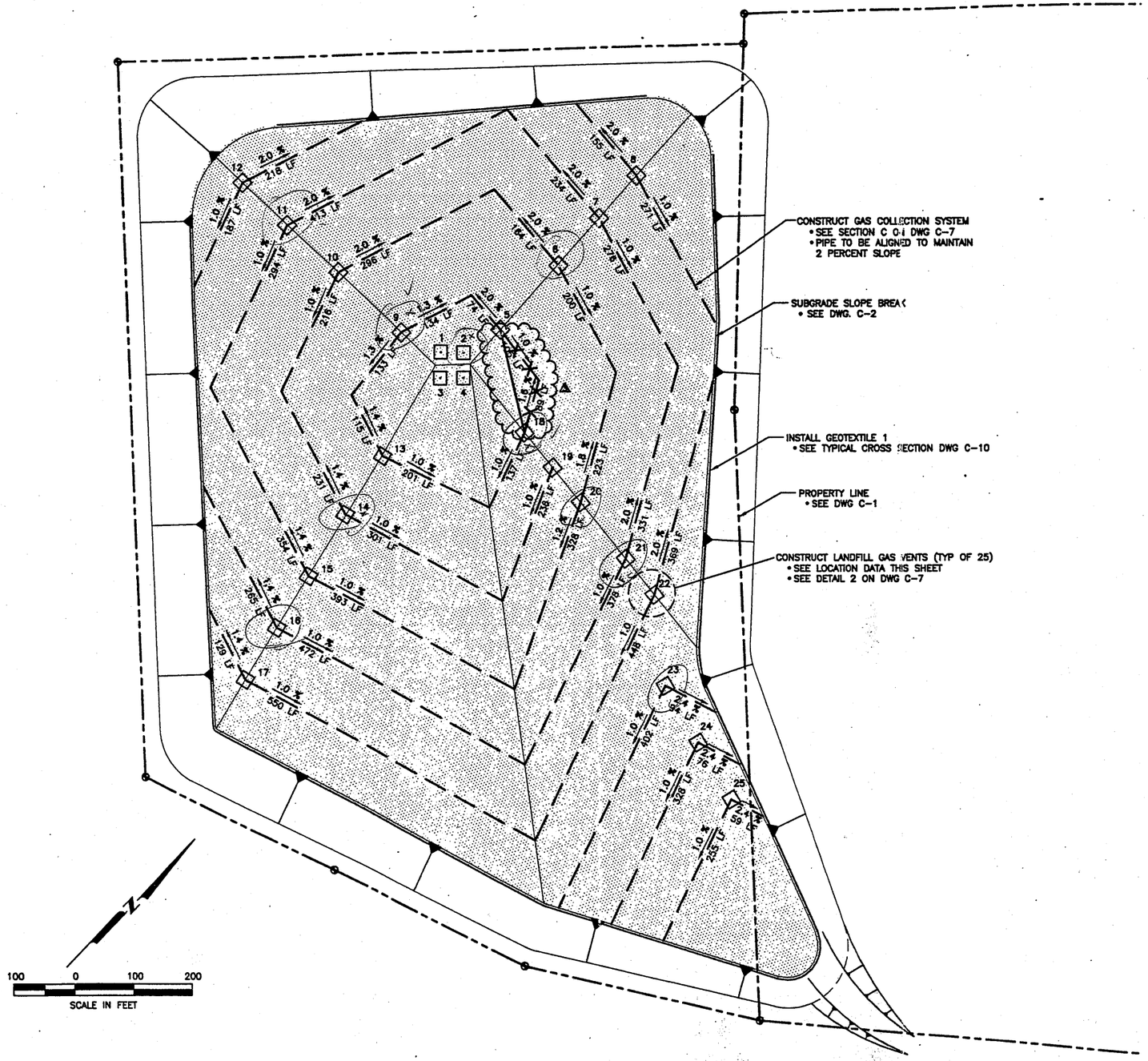
At Kekaha Landfill, if the developer is expected to install and operate/maintain the wellfield, it is SCS's opinion that it is likely that no more than the lower end of the above range ($0.25/mmBtu) could be charged for the landfill gas. Typically, the agreed-upon price would increase at a fixed percentage each year, or would be indexed to a benchmark energy cost (e.g., price of oil).

The above development scenario presumes that the County assumes none of the costs associated with the wellfield, landfill gas processing skid or transmission pipeline construction and operation/maintenance. The benefit to the County is a "free" landfill gas collection system, plus $0.25/mmBtu for all landfill gas productively used. In an alternative scenario, the County could self-develop the project, assuming all costs, and sell the processed landfill gas to PMRF, delivered to the PMRF power plant. In this scenario, the County would receive a much higher price for the landfill gas. Under such a scenario, the County could probably charge between 65 percent and 90 percent of PMRF's avoided cost of fuel. The higher percentage would apply if PMRF incurred little or no cost to convert to landfill gas firing. The higher the PMRF conversion cost, the lower the percentage that would be paid by PMRF to the County.

As an illustration, if it is assumed that PMRF is paying $1.50 per gallon for oil, that the energy content of the oil is 140,000 Btu/gal, and that the discount is 70 percent, the County could charge $7.50/mmBtu. The forthcoming report on the other tasks under SCS's scope of work will discuss the advantages and disadvantages to the County in taking alternative approaches to development of the project.

APPENDIX A

PHASE I LANDFILL CONSTRUCTION COMPLETION DRAWINGS AND SAMPLING LOCATIONS



GAS VENT LOCATIONS

VENT NO.	NORTHING	EASTING
1	55715.9	414115.7
2	55742.3	414143.9
3	55684.8	414145.3
4	55712.7	414173.2
5	55813.1	414161.1
6	55955.4	414155.6
7	56057.3	414148.8
8	56150.8	414144.3
9	55691.3	414045.8
10	55686.3	413900.8
11	55681.7	413787.1
12	55678.9	413686.2
13	55524.0	414187.7
14	55411.8	414192.1
15	55296.8	414222.3
16	55199.5	414245.5
17	55102.4	414269.1
18	55721.3	414309.8
19	55713.2	414383.8
20	55705.1	414457.9
21	55692.1	414577.2
22	55683.8	414653.7
23	55590.4	414772.6
24	55563.5	414876.9
25	55536.7	414980.8

NOTES AND LEGEND:

1. See Landfill Gas Collection System Details and Sections, DWG C-7.
2. See Typical Cross Section on DWG C-10.

Geotextile 1

RECORD DRAWINGS

These drawings have been revised to show significant changes which occurred during construction. Revisions are based on contractor red-lined drawings and other record information. These drawings are not intended to present all "As-Built" information, except where noted on individual drawings.

William P. Lawson — Prepared By — 1-31-96 Date

NO.	DATE	REVISIONS	BY	CHK
3	1/96	RECORD DRAWINGS	WTH	
2	6/94	ADJUSTED DESIGN BASED ON ACTUAL TOPOGRAPHIC SURVEY	WTH	
1	4/94	ISSUED FOR CONSTRUCTION	WTH	

DRAWN: JRL/JCL	PROJECT NO: 22924.703		
ENGINEER:	SCALE: AS SHOWN		
CHECKED:	APPROVED:		
DATE:	DATE:		

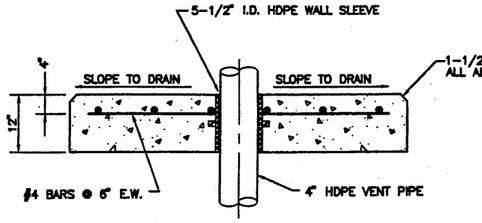
Harding Lawson Associates
Engineering and Environmental Services
235 Pearlridge Center, Phase 1, 98-1005 Moanalua Road
Aiea, Hawaii 96701
(808) 486-6009 Phone
(808) 486-7184 Fax

PHASE I CLOSURE

KEKAHA SANITARY LANDFILL
COUNTY OF KAUAI
KEKAHA, HAWAII

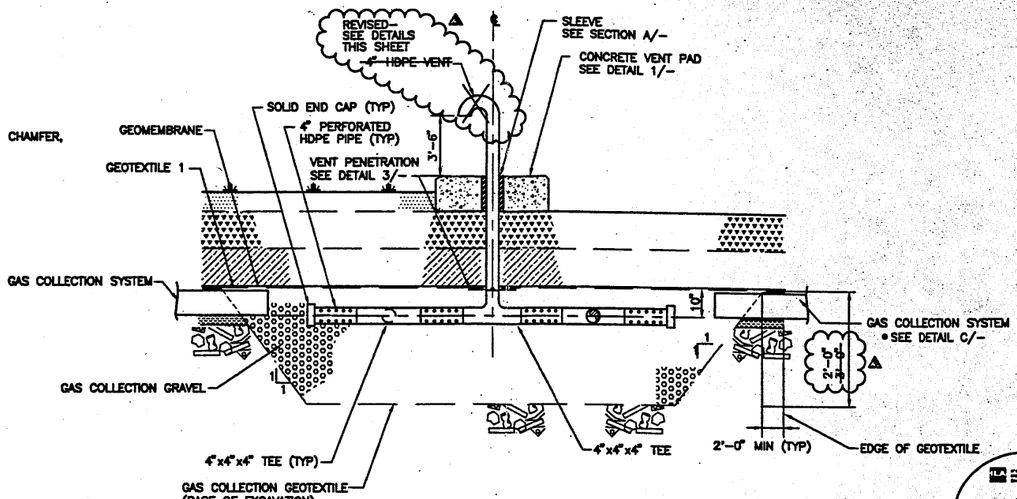
LANDFILL GAS SYSTEM & GEOTEXTILE 1 PLAN

DRAWING: C-3
SHEET: 5 OF 12
REVISION NUMBER: 3
DATE: JANUARY 31, 1996



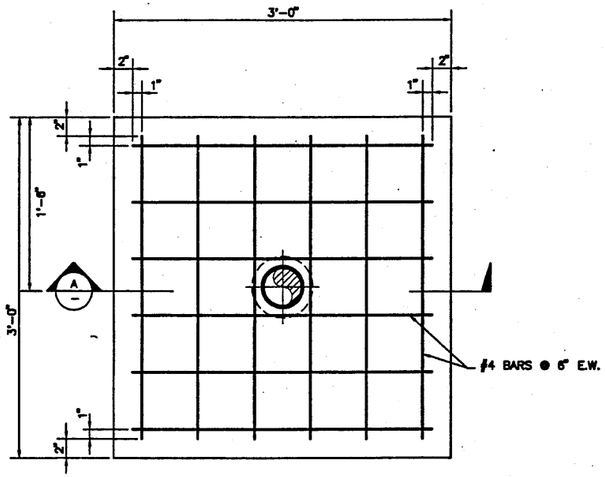
CONCRETE VENT PAD

SECTION A / NOT TO SCALE



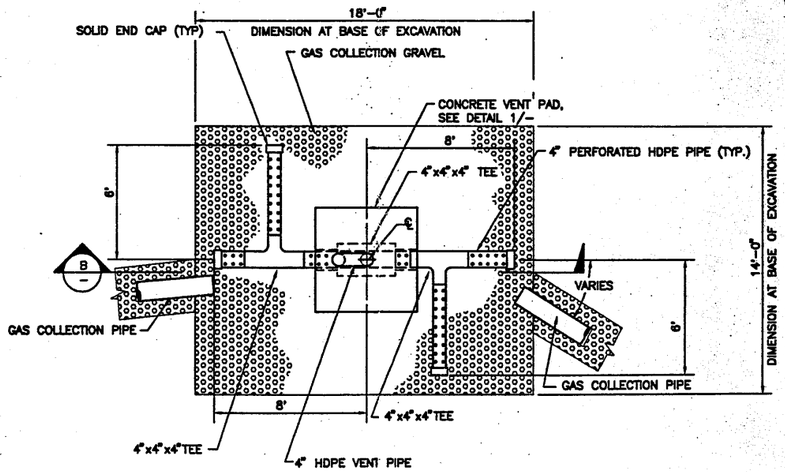
LANDFILL GAS VENT

SECTION B / NOT TO SCALE



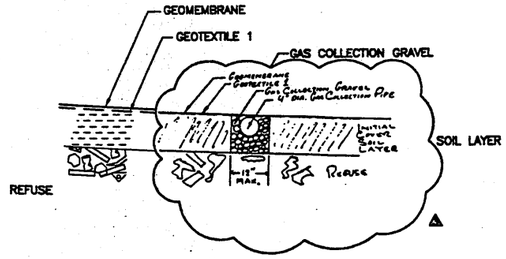
CONCRETE VENT PAD PLAN

DETAIL 1 / C-3 / NOT TO SCALE



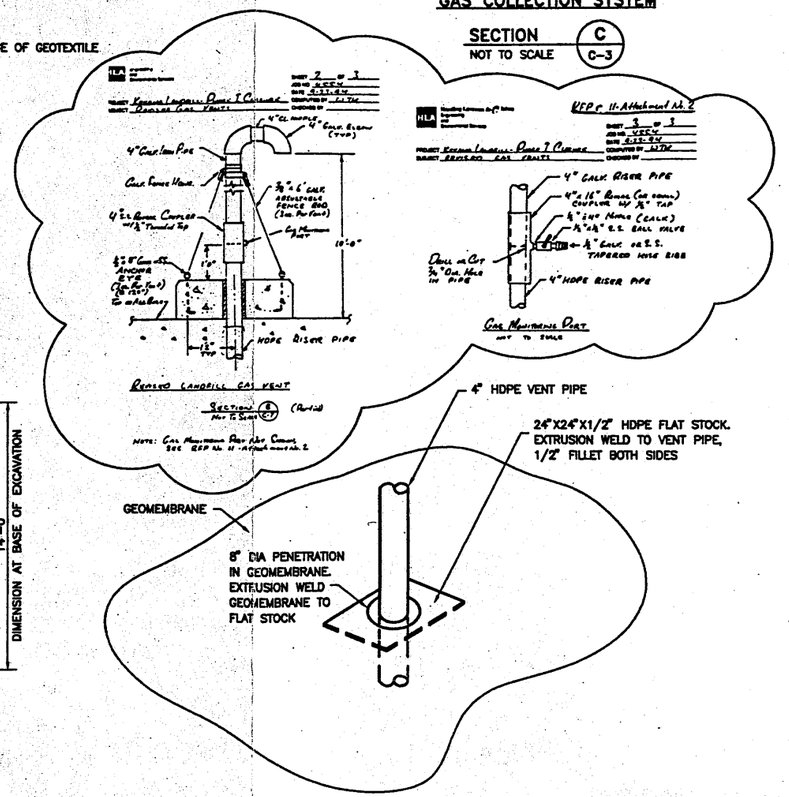
LANDFILL GAS VENT

PLAN 2 / C-3 / NOT TO SCALE



GAS COLLECTION SYSTEM

SECTION C / C-3 / NOT TO SCALE



VENT PENETRATION

DETAIL 3 / C-3 / NOT TO SCALE

RECORD DRAWINGS

These drawings have been revised to show significant changes which occurred during construction. Revisions are based on contractor red-lined drawings and other record information. These drawings are not intended to present all "As-Built" information, except where noted on individual drawings.

William J. Ford — Prepared By — 1-31-96 Date

NO.	DATE	REVISIONS	BY	CHK
3	1/96	RECORD DRAWINGS	WTH	
2	6/94	ADJUSTED DESIGN BASED ON ACTUAL TOPOGRAPHIC SURVEY	WTH	
1	4/94	ISSUED FOR CONSTRUCTION	WTH	

DRAWN: JRL/JCL | PROJECT NO: 22924.703
ENGINEER: | SCALE: AS SHOWN
CHECKED: | APPROVED:
DATE: | DATE:

Harding Lawson Associates
Engineering and Environmental Services
235 Pearlridge Center, Phase 1 98-1005 Moanalua Road
Aiea, Hawaii 96701
(808)486-6009 Phone
(808)486-7184 Fax

PHASE I CLOSURE

KEKAHA SANITARY LANDFILL
COUNTY OF KAUAI
KEKAHA, HAWAII

LANDFILL GAS COLLECTION SYSTEM DETAILS AND SECTIONS

DRAWING: C-7
SHEET: 9 OF 12
REVISION NUMBER: 3
DATE: JANUARY 31, 1996

APPENDIX B

PHASE I LANDFILL'S LANDFILL GAS LABORATORY REPORTS

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0601222C

Work Order Summary

CLIENT:	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way, Suite 100 Long Beach, CA 90806-6816	**BILL TO:**	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way, Suite 100 Long Beach, CA 90806-6816
PHONE:	562-426-9544	**P.O. #**	06-1126
FAX:	562-988-3183	**PROJECT #**	Kekaha Landfill
DATE RECEIVED:	01/13/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/26/2006		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	No. 21 Bag 3-L	Modified ASTM D-1945	Tedlar Bag
02A	No. 18 Bag 5-L	Modified ASTM D-1945	Tedlar Bag
03A	No. 9 Bag 5-L	Modified ASTM D-1945	Tedlar Bag
06A	No. 14 Bag 3-L	Modified ASTM D-1945	Tedlar Bag
07A	No. 23 Bag 1-L	Modified ASTM D-1945	Tedlar Bag
07AA	No. 23 Bag 1-L Duplicate	Modified ASTM D-1945	Tedlar Bag
08A	No. 6 Bag 1-L	Modified ASTM D-1945	Tedlar Bag
09A	No. 16 Bag 1-L	Modified ASTM D-1945	Tedlar Bag
10A	Lab Blank	Modified ASTM D-1945	NA
10B	Lab Blank	Modified ASTM D-1945	NA
11A	LCS	Modified ASTM D-1945	NA
11B	LCS	Modified ASTM D-1945	NA
11C	LCS	Modified ASTM D-1945	NA

CERTIFIED BY: Linda A. Truman DATE: 01/26/06

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/05, Expiration date: 06/30/06
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified ASTM D-1945
SCS Engineers
Workorder# 0601222C

Two 3 Liter Tedlar Bag, two 5 Liter Tedlar Bag, and three 1 Liter Tedlar Bag samples were received on January 13, 2006. The laboratory performed analysis via modified ASTM Method D-1945 for Methane and fixed gases in natural gas using GC/FID or GC/TCD. The method involves direct injection of 1.0 mL of sample. See the data sheets for the reporting limits for each compound.

On the analytical column employed for this analysis, Oxygen coelutes with Argon. The corresponding peak is quantitated as Oxygen.

Method modifications taken to run these samples include:

Requirement	*ASTM D-1945*	*ATL Modifications*
Normalization	Sum of original values should not differ from 100.0% by more than 1.0%.	Sum of original values may range between 75-125%. Normalization of data not performed.
Sample analysis	Equilibrate samples to 20-50° F. above source temperature at field sampling	No heating of samples is performed.
Sample calculation	Response factor is calculated using peak height for C5 and lighter compounds.	Peak areas are used for all target analytes to quantitate concentrations.
Reference Standard	Concentration should not be < half of nor differ by more than 2 X the concentration of the sample. Run 2 consecutive checks; must agree within 1%.	A minimum 3-point linear calibration is performed. The acceptance criterion is %RSD </= 25%. All target analytes must be within the linear range of calibration (with the exception of O2, N2, and C6+ Hydrocarbons).
Sample Injection Volume	0.50 mL to achieve Methane linearity.	1.0 mL.

Receiving Notes

Samples No. 23 Bag 1-L, No. 6 Bag 1-L and No. 16 Bag 1-L were received without documentation regarding collection date. The date on the sample tag was assumed to be the date of collection and was used to determine the extent of hold time.

Analytical Notes

There were no analytical discrepancies.

Definition of Data Qualifying Flags

Six qualifiers may have been used on the data analysis sheets and indicate as follows:

J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

Client Sample ID: No. 21 Bag 3-L

Lab ID#: 0601222C-01A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011323	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 04:52 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	18
Nitrogen	0.10	68
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	9.0
Carbon Dioxide	0.010	3.8
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	Not Detected
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 91
Total Sp. Gravity = 0.96
Container Type: 3 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 18 Bag 5-L

Lab ID#: 0601222C-02A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011324	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 05:41 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.39
Nitrogen	0.10	7.1
Carbon Monoxide	0.010	Not Detected
Methane	0.00025	74
Carbon Dioxide	0.010	20
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0031
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 750
Total Sp. Gravity = 0.79

Methane is reported from file # 9011327 analyzed on 01-13-06 at a dilution factor of 2.50.
Container Type: 5 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 9 Bag 5-L

Lab ID#: 0601222C-03A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011325	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 06:03 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.46
Nitrogen	0.10	4.9
Carbon Monoxide	0.010	Not Detected
Methane	0.00025	73
Carbon Dioxide	0.010	24
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0035
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 740
Total Sp. Gravity = 0.82

Methane is reported from file # 9011326 analyzed on 01-13-06 at a dilution factor of 2.50.
Container Type: 5 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 14 Bag 3-L

Lab ID#: 0601222C-06A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011322	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 04:19 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	6.5
Nitrogen	0.10	27
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	48
Carbon Dioxide	0.010	20
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0020
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 480
Total Sp. Gravity = 0.90

Container Type: 3 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 23 Bag 1-L

Lab ID#: 0601222C-07A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011318	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 02:30 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	6.9
Nitrogen	0.10	40
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	37
Carbon Dioxide	0.010	17
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0023
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 370
Total Sp. Gravity = 0.92

Container Type: 1 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 23 Bag 1-L Duplicate

Lab ID#: 0601222C-07AA

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011319	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 02:52 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	6.9
Nitrogen	0.10	40
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	37
Carbon Dioxide	0.010	17
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0023
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 380
Total Sp. Gravity = 0.92

Container Type: 1 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 6 Bag 1-L

Lab ID#: 0601222C-08A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011320	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 03:15 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	0.89
Nitrogen	0.10	14
Carbon Monoxide	0.010	Not Detected
Methane	0.00020	60
Carbon Dioxide	0.010	27
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0011
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 610
Total Sp. Gravity = 0.89

Methane is reported from file # 9011328 analyzed on 01-13-06 at a dilution factor of 2.00.
Container Type: 1 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 16 Bag 1-L

Lab ID#: 0601222C-09A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011321	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 03:36 PM

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	1.6
Nitrogen	0.10	20
Carbon Monoxide	0.010	Not Detected
Methane	0.00020	56
Carbon Dioxide	0.010	24
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	0.0043
Isobutane	0.0010	0.0012
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected
Hydrogen	0.010	Not Detected

Total BTU/Cu.F. = 570
Total Sp. Gravity = 0.89

Methane is reported from file # 9011329 analyzed on 01-13-06 at a dilution factor of 2.00.
Container Type: 1 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0601222C-10A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011308b	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 10:36 AM	

Compound	Rpt. Limit (%)	Amount (%)
Hydrogen	0.010	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0601222C-10B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011307	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 10:14 AM	

Compound	Rpt. Limit (%)	Amount (%)
Oxygen	0.10	Not Detected
Nitrogen	0.10	Not Detected
Carbon Monoxide	0.010	Not Detected
Methane	0.00010	Not Detected
Carbon Dioxide	0.010	Not Detected
Ethane	0.0010	Not Detected
Ethene	0.0010	Not Detected
Acetylene	0.0010	Not Detected
Propane	0.0010	Not Detected
Isobutane	0.0010	Not Detected
Butane	0.0010	Not Detected
Neopentane	0.0010	Not Detected
Isopentane	0.0010	Not Detected
Pentane	0.0010	Not Detected
C6+	0.010	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222C-11A

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011305b	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 09:27 AM	

Compound	%Recovery
Oxygen	99
Nitrogen	100
Carbon Monoxide	98
Carbon Dioxide	102

Container Type: NA - Not Applicable

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222C-11B

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011334b	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 10:25 PM	

Compound	%Recovery
Hydrogen	97

Container Type: NA - Not Applicable

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222C-11C

NATURAL GAS ANALYSIS BY MODIFIED ASTM D-1945

File Name:	9011303	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 08:36 AM	

Compound	%Recovery
Methane	98
Ethane	100
Ethene	99
Acetylene	97
Propane	94
Isobutane	101
Butane	103
Neopentane	103
Isopentane	97
Pentane	95
C6+	105

Container Type: NA - Not Applicable

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0601222B

Work Order Summary

CLIENT:	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way Suite 100 Long Beach, CA 90806-6816	**BILL TO:**	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way Suite 100 Long Beach, CA 90806-6816
PHONE:	562-426-9544	**P.O. #**	06-1126
FAX:	562-988-3183	**PROJECT #**	Kekaha Landfill
DATE RECEIVED:	01/13/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/18/2006		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	No. 21 Bag 3-L	ASTM D-5504	Tedlar Bag
02A	No. 18 Bag 5-L	ASTM D-5504	Tedlar Bag
03A	No. 9 Bag 5-L	ASTM D-5504	Tedlar Bag
04A	Lab Blank	ASTM D-5504	NA
05A	LCS	ASTM D-5504	NA

CERTIFIED BY: Linda D. Fruman DATE: 01/18/06

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/05, Expiration date: 06/30/06
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
ASTM D-5504
SCS Engineers
Workorder# 0601222B

One 3 Liter Tedlar Bag and two 5 Liter Tedlar Bag samples were received on January 13, 2006. The laboratory performed the analysis of sulfur compounds via ASTM D-5504 using GC/SCD. The method involves direct injection of the air sample into the GC via a fixed 1.0 mL sampling loop. See the data sheets for the reporting limits for each compound.

Receiving Notes

Samples were received past the recommended hold time of 24 hours. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the analysis proceeded.

Analytical Notes

Diethyl Sulfide coelutes with 2-Ethyl Thiophene. The corresponding peak is reported as 2-Ethyl Thiophene.

Definition of Data Qualifying Flags

Seven qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
U - Compound analyzed for but not detected above the detection limit.
M - Reported value may be biased due to apparent matrix interferences.
File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

Summary of Detected Compounds
SULFUR GASES BY ASTM D-5504 GC/SCD

Client Sample ID: No. 21 Bag 3-L

Lab ID#: 0601222B-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Carbonyl Sulfide	4.0	8.8
Dimethyl Sulfide	4.0	7.4
Carbon Disulfide	4.0	14

Client Sample ID: No. 18 Bag 5-L

Lab ID#: 0601222B-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	4.0	66
Carbonyl Sulfide	4.0	14 M
Methyl Mercaptan	4.0	9.0
Carbon Disulfide	4.0	20
tert-Butyl Mercaptan	4.0	4.6

Client Sample ID: No. 9 Bag 5-L

Lab ID#: 0601222B-03A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Carbonyl Sulfide	4.0	6.6 M
Methyl Mercaptan	4.0	6.6
Dimethyl Sulfide	4.0	47
Carbon Disulfide	4.0	9.3

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Client Sample ID: No. 21 Bag 3-L

Lab ID#: 0601222B-01A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	b011309	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 01:39 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	4.0	Not Detected
Carbonyl Sulfide	4.0	8.8
Methyl Mercaptan	4.0	Not Detected
Ethyl Mercaptan	4.0	Not Detected
Dimethyl Sulfide	4.0	7.4
Carbon Disulfide	4.0	14
Isopropyl Mercaptan	4.0	Not Detected
tert-Butyl Mercaptan	4.0	Not Detected
n-Propyl Mercaptan	4.0	Not Detected
Ethyl Methyl Sulfide	4.0	Not Detected
Thiophene	4.0	Not Detected
Isobutyl Mercaptan	4.0	Not Detected
Diethyl Sulfide	4.0	Not Detected
n-Butyl Mercaptan	4.0	Not Detected
Dimethyl Disulfide	4.0	Not Detected
3-Methylthiophene	4.0	Not Detected
Tetrahydrothiophene	4.0	Not Detected
2-Ethylthiophene	4.0	Not Detected
2,5-Dimethylthiophene	4.0	Not Detected
Diethyl Disulfide	4.0	Not Detected

Container Type: 3 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 18 Bag 5-L

Lab ID#: 0601222B-02A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	b011310	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 02:09 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	4.0	66
Carbonyl Sulfide	4.0	14 M
Methyl Mercaptan	4.0	9.0
Ethyl Mercaptan	4.0	Not Detected
Dimethyl Sulfide	4.0	Not Detected
Carbon Disulfide	4.0	20
Isopropyl Mercaptan	4.0	Not Detected
tert-Butyl Mercaptan	4.0	4.6
n-Propyl Mercaptan	4.0	Not Detected
Ethyl Methyl Sulfide	4.0	Not Detected
Thiophene	4.0	Not Detected
Isobutyl Mercaptan	4.0	Not Detected
Diethyl Sulfide	4.0	Not Detected
n-Butyl Mercaptan	4.0	Not Detected
Dimethyl Disulfide	4.0	Not Detected
3-Methylthiophene	4.0	Not Detected
Tetrahydrothiophene	4.0	Not Detected
2-Ethylthiophene	4.0	Not Detected
2,5-Dimethylthiophene	4.0	Not Detected
Diethyl Disulfide	4.0	Not Detected

M = Reported value may be biased due to apparent matrix interferences.

Container Type: 5 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: No. 9 Bag 5-L

Lab ID#: 0601222B-03A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	b011311	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/13/06 02:39 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	4.0	Not Detected
Carbonyl Sulfide	4.0	6.6 M
Methyl Mercaptan	4.0	6.6
Ethyl Mercaptan	4.0	Not Detected
Dimethyl Sulfide	4.0	47
Carbon Disulfide	4.0	9.3
Isopropyl Mercaptan	4.0	Not Detected
tert-Butyl Mercaptan	4.0	Not Detected
n-Propyl Mercaptan	4.0	Not Detected
Ethyl Methyl Sulfide	4.0	Not Detected
Thiophene	4.0	Not Detected
Isobutyl Mercaptan	4.0	Not Detected
Diethyl Sulfide	4.0	Not Detected
n-Butyl Mercaptan	4.0	Not Detected
Dimethyl Disulfide	4.0	Not Detected
3-Methylthiophene	4.0	Not Detected
Tetrahydrothiophene	4.0	Not Detected
2-Ethylthiophene	4.0	Not Detected
2,5-Dimethylthiophene	4.0	Not Detected
Diethyl Disulfide	4.0	Not Detected

M = Reported value may be biased due to apparent matrix interferences.

Container Type: 5 Liter Tedlar Bag

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0601222B-04A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	b011304	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 08:12 AM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)
Hydrogen Sulfide	4.0	Not Detected
Carbonyl Sulfide	4.0	Not Detected
Methyl Mercaptan	4.0	Not Detected
Ethyl Mercaptan	4.0	Not Detected
Dimethyl Sulfide	4.0	Not Detected
Carbon Disulfide	4.0	Not Detected
Isopropyl Mercaptan	4.0	Not Detected
tert-Butyl Mercaptan	4.0	Not Detected
n-Propyl Mercaptan	4.0	Not Detected
Ethyl Methyl Sulfide	4.0	Not Detected
Thiophene	4.0	Not Detected
Isobutyl Mercaptan	4.0	Not Detected
Diethyl Sulfide	4.0	Not Detected
n-Butyl Mercaptan	4.0	Not Detected
Dimethyl Disulfide	4.0	Not Detected
3-Methylthiophene	4.0	Not Detected
Tetrahydrothiophene	4.0	Not Detected
2-Ethylthiophene	4.0	Not Detected
2,5-Dimethylthiophene	4.0	Not Detected
Diethyl Disulfide	4.0	Not Detected

Container Type: NA - Not Applicable

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222B-05A

SULFUR GASES BY ASTM D-5504 GC/SCD

File Name:	b011302	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/12/06 10:42 PM	

Compound	%Recovery
Hydrogen Sulfide	113
Carbonyl Sulfide	83
Methyl Mercaptan	88
Ethyl Mercaptan	102
Dimethyl Sulfide	102
Carbon Disulfide	107
Isopropyl Mercaptan	93
tert-Butyl Mercaptan	106
n-Propyl Mercaptan	102
Ethyl Methyl Sulfide	102
Thiophene	78
Isobutyl Mercaptan	112
Diethyl Sulfide	86
n-Butyl Mercaptan	74
Dimethyl Disulfide	92
3-Methylthiophene	101
Tetrahydrothiophene	99
2-Ethylthiophene	86
2,5-Dimethylthiophene	79
Diethyl Disulfide	92

Container Type: NA - Not Applicable

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AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0601222A

Work Order Summary

CLIENT:	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way, Suite 100 Long Beach, CA 90806-6816	**BILL TO:**	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way, Suite 100 Long Beach, CA 90806-6816
PHONE:	562-426-9544	**P.O. #**	06-1126
FAX:	562-988-3183	**PROJECT #**	Kekaha Landfill
DATE RECEIVED:	01/13/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/26/2006		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.
01A	No. 21 Bag 3-L	Modified TO-15	Tedlar Bag
01AA	No. 21 Bag 3-L Duplicate	Modified TO-15	Tedlar Bag
02A	No. 18 Bag 5-L	Modified TO-15	Tedlar Bag
03A	No. 9 Bag 5-L	Modified TO-15	Tedlar Bag
04A	No. 20 Bag 1-L	Modified TO-15	Tedlar Bag
05A	No. 2 Bag 1-L	Modified TO-15	Tedlar Bag
06A	No. 14 Bag 3-L	Modified TO-15	Tedlar Bag
07A	Lab Blank	Modified TO-15	NA
08A	CCV	Modified TO-15	NA
09A	LCS	Modified TO-15	NA

CERTIFIED BY: Linda A. Truman DATE: 01/26/06

Laboratory Director

Certfication numbers: AR DEQ - 03-084-0, CA NELAP - 02110CA, LA NELAP/LELAP- AI 30763, NJ NELAP - CA004
NY NELAP - 11291, UT NELAP - 9166389892
Name of Accrediting Agency: NELAP/Florida Department of Health, Scope of Application: Clean Air Act,
Accreditation number: E87680, Effective date: 07/01/05, Expiration date: 06/30/06
Air Toxics Ltd. certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Modified TO-15
SCS Engineers
Workorder# 0601222A

Two 3 Liter Tedlar Bag, two 5 Liter Tedlar Bag, and two 1 Liter Tedlar Bag samples were received on January 13, 2006. The laboratory performed analysis via modified EPA Method TO-15 using GC/MS in the full scan mode. The method involves concentrating up to 0.2 liters of air. The concentrated aliquot is then flash vaporized and swept through a water management system to remove water vapor. Following dehumidification, the sample passes directly into the GC/MS for analysis.

Method modifications taken to run these samples are summarized in the below table. Specific project requirements may over-ride the ATL modifications.

Requirement	*TO-15*	*ATL Modifications*
Daily CCV	+- 30% Difference	</= 30% Difference with two allowed out up to </=40%.; flag and narrate outliers
Sample collection media	Summa canister	ATL recommends use of summa canisters to insure data defensibility, but will report results from Tedlar bags at client request
Method Detection Limit	Follow 40CFR Pt.136 App. B	The MDL met all relevant requirements in Method TO-15 (statistical MDL less than the LOQ). The concentration of the spiked replicate may have exceeded 10X the calculated MDL in some cases

Receiving Notes

Samples No. 20 Bag 1-L, No. 2 Bag 1-L and No. 14 Bag 3-L were received without documentation regarding collection date on the COC. The date on the sample tag was assumed to be the date of collection and was used to determine the extent of hold time.

Analytical Notes

All Quality Control Limit failures and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page. Target compound non-detects in the samples that are associated with high bias in QC analyses have not been flagged.

The reported LCS for each daily batch has been derived from more than one analytical file.

Samples No. 21 Bag 3-L, No. 21 Bag 3-L Duplicate, No. 18 Bag 5-L, No. 9 Bag 5-L, No. 20 Bag 1-L, No. 2 Bag 1-L and No. 14 Bag 3-L were transferred from Tedlar bags into summa canisters to extend the hold time from 72 hours to 14 days. Canister pressurization resulted in a dilution factor which was applied to all analytical results.

Dilution was performed on samples No. 9 Bag 5-L, No. 20 Bag 1-L and No. 14 Bag 3-L due to the presence of high level non-target species.

The reported result for Cumene in samples No. 21 Bag 3-L, No. 21 Bag 3-L Duplicate, No. 18 Bag 5-L, No. 9 Bag 5-L, No. 20 Bag 1-L, No. 2 Bag 1-L and No. 14 Bag 3-L may be biased high due to co-elution

with a non target compound with similar characteristic ions. Both the primary and secondary ion for Cumene exhibited potential interference.

Definition of Data Qualifying Flags

Eight qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction no performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

Client Sample ID: No. 21 Bag 3-L

Lab ID#: 0601222A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011812	Date of Collection:	1/10/06
Dil. Factor:	8.08	Date of Analysis:	1/18/06 07:06 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	4.0	Not Detected	20	Not Detected
Freon 114	4.0	Not Detected	28	Not Detected
Chloromethane	16	Not Detected	33	Not Detected
Vinyl Chloride	4.0	Not Detected	10	Not Detected
1,3-Butadiene	4.0	Not Detected	8.9	Not Detected
Bromomethane	4.0	Not Detected	16	Not Detected
Chloroethane	4.0	Not Detected	11	Not Detected
Freon 11	4.0	Not Detected	23	Not Detected
Ethanol	16	Not Detected	30	Not Detected
Freon 113	4.0	Not Detected	31	Not Detected
1,1-Dichloroethene	4.0	Not Detected	16	Not Detected
Acetone	16	18	38	44
2-Propanol	16	22	40	55
Carbon Disulfide	4.0	Not Detected	12	Not Detected
3-Chloropropene	16	Not Detected	50	Not Detected
Methylene Chloride	4.0	190	14	660
Methyl tert-butyl ether	4.0	Not Detected	14	Not Detected
trans-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Hexane	4.0	17	14	60
1,1-Dichloroethane	4.0	Not Detected	16	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.0	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Tetrahydrofuran	4.0	Not Detected	12	Not Detected
Chloroform	4.0	Not Detected	20	Not Detected
1,1,1-Trichloroethane	4.0	Not Detected	22	Not Detected
Cyclohexane	4.0	18	14	61
Carbon Tetrachloride	4.0	Not Detected	25	Not Detected
2,2,4-Trimethylpentane	4.0	11	19	52
Benzene	4.0	Not Detected	13	Not Detected
1,2-Dichloroethane	4.0	Not Detected	16	Not Detected
Heptane	4.0	26	16	110
Trichloroethene	4.0	Not Detected	22	Not Detected
1,2-Dichloropropane	4.0	Not Detected	19	Not Detected
1,4-Dioxane	16	Not Detected	58	Not Detected
Bromodichloromethane	4.0	Not Detected	27	Not Detected
cis-1,3-Dichloropropene	4.0	Not Detected	18	Not Detected
4-Methyl-2-pentanone	4.0	Not Detected	16	Not Detected
Toluene	4.0	6.9	15	26
trans-1,3-Dichloropropene	4.0	Not Detected	18	Not Detected
1,1,2-Trichloroethane	4.0	Not Detected	22	Not Detected
Tetrachloroethene	4.0	Not Detected	27	Not Detected
2-Hexanone	16	Not Detected	66	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 21 Bag 3-L

Lab ID#: 0601222A-01A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011812	Date of Collection:	1/10/06
Dil. Factor:	8.08	Date of Analysis:	1/18/06 07:06 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	4.0	Not Detected	34	Not Detected
1,2-Dibromoethane (EDB)	4.0	Not Detected	31	Not Detected
Chlorobenzene	4.0	Not Detected	18	Not Detected
Ethyl Benzene	4.0	Not Detected	18	Not Detected
m,p-Xylene	4.0	Not Detected	18	Not Detected
o-Xylene	4.0	Not Detected	18	Not Detected
Styrene	4.0	Not Detected	17	Not Detected
Bromoform	4.0	Not Detected	42	Not Detected
Cumene	4.0	5.0	20	25
1,1,2,2-Tetrachloroethane	4.0	Not Detected	28	Not Detected
Propylbenzene	4.0	Not Detected	20	Not Detected
4-Ethyltoluene	4.0	Not Detected	20	Not Detected
1,3,5-Trimethylbenzene	4.0	Not Detected	20	Not Detected
1,2,4-Trimethylbenzene	4.0	Not Detected	20	Not Detected
1,3-Dichlorobenzene	4.0	Not Detected	24	Not Detected
1,4-Dichlorobenzene	4.0	Not Detected	24	Not Detected
alpha-Chlorotoluene	4.0	Not Detected	21	Not Detected
1,2-Dichlorobenzene	4.0	Not Detected	24	Not Detected
1,2,4-Trichlorobenzene	16	Not Detected	120	Not Detected
Hexachlorobutadiene	16	Not Detected	170	Not Detected

Container Type: 3 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	106	70-130

AIR TOXICS LTD.

Client Sample ID: No. 21 Bag 3-L Duplicate

Lab ID#: 0601222A-01AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011820	Date of Collection:	1/10/06
Dil. Factor:	8.08	Date of Analysis:	1/19/06 02:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	4.0	Not Detected	20	Not Detected
Freon 114	4.0	Not Detected	28	Not Detected
Chloromethane	16	Not Detected	33	Not Detected
Vinyl Chloride	4.0	Not Detected	10	Not Detected
1,3-Butadiene	4.0	Not Detected	8.9	Not Detected
Bromomethane	4.0	Not Detected	16	Not Detected
Chloroethane	4.0	Not Detected	11	Not Detected
Freon 11	4.0	Not Detected	23	Not Detected
Ethanol	16	Not Detected	30	Not Detected
Freon 113	4.0	Not Detected	31	Not Detected
1,1-Dichloroethene	4.0	Not Detected	16	Not Detected
Acetone	16	18	38	42
2-Propanol	16	22	40	54
Carbon Disulfide	4.0	Not Detected	12	Not Detected
3-Chloropropene	16	Not Detected	50	Not Detected
Methylene Chloride	4.0	190	14	660
Methyl tert-butyl ether	4.0	Not Detected	14	Not Detected
trans-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Hexane	4.0	18	14	62
1,1-Dichloroethane	4.0	Not Detected	16	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.0	Not Detected	12	Not Detected
cis-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Tetrahydrofuran	4.0	Not Detected	12	Not Detected
Chloroform	4.0	Not Detected	20	Not Detected
1,1,1-Trichloroethane	4.0	Not Detected	22	Not Detected
Cyclohexane	4.0	18	14	64
Carbon Tetrachloride	4.0	Not Detected	25	Not Detected
2,2,4-Trimethylpentane	4.0	11	19	50
Benzene	4.0	Not Detected	13	Not Detected
1,2-Dichloroethane	4.0	Not Detected	16	Not Detected
Heptane	4.0	27	16	110
Trichloroethene	4.0	Not Detected	22	Not Detected
1,2-Dichloropropane	4.0	Not Detected	19	Not Detected
1,4-Dioxane	16	Not Detected	58	Not Detected
Bromodichloromethane	4.0	Not Detected	27	Not Detected
cis-1,3-Dichloropropene	4.0	Not Detected	18	Not Detected
4-Methyl-2-pentanone	4.0	Not Detected	16	Not Detected
Toluene	4.0	7.2	15	27
trans-1,3-Dichloropropene	4.0	Not Detected	18	Not Detected
1,1,2-Trichloroethane	4.0	Not Detected	22	Not Detected
Tetrachloroethene	4.0	Not Detected	27	Not Detected
2-Hexanone	16	Not Detected	66	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 21 Bag 3-L Duplicate

Lab ID#: 0601222A-01AA

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011820	Date of Collection:	1/10/06
Dil. Factor:	8.08	Date of Analysis:	1/19/06 02:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	4.0	Not Detected	34	Not Detected
1,2-Dibromoethane (EDB)	4.0	Not Detected	31	Not Detected
Chlorobenzene	4.0	Not Detected	18	Not Detected
Ethyl Benzene	4.0	Not Detected	18	Not Detected
m,p-Xylene	4.0	Not Detected	18	Not Detected
o-Xylene	4.0	Not Detected	18	Not Detected
Styrene	4.0	Not Detected	17	Not Detected
Bromoform	4.0	Not Detected	42	Not Detected
Cumene	4.0	5.1	20	25
1,1,2,2-Tetrachloroethane	4.0	Not Detected	28	Not Detected
Propylbenzene	4.0	Not Detected	20	Not Detected
4-Ethyltoluene	4.0	Not Detected	20	Not Detected
1,3,5-Trimethylbenzene	4.0	Not Detected	20	Not Detected
1,2,4-Trimethylbenzene	4.0	Not Detected	20	Not Detected
1,3-Dichlorobenzene	4.0	Not Detected	24	Not Detected
1,4-Dichlorobenzene	4.0	Not Detected	24	Not Detected
alpha-Chlorotoluene	4.0	Not Detected	21	Not Detected
1,2-Dichlorobenzene	4.0	Not Detected	24	Not Detected
1,2,4-Trichlorobenzene	16	Not Detected	120	Not Detected
Hexachlorobutadiene	16	Not Detected	170	Not Detected

Container Type: 3 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	103	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

Client Sample ID: No. 18 Bag 5-L

Lab ID#: 0601222A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011813	Date of Collection:	1/10/06
Dil. Factor:	8.20	Date of Analysis:	1/18/06 08:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	4.1	Not Detected	20	Not Detected
Freon 114	4.1	44	29	310
Chloromethane	16	Not Detected	34	Not Detected
Vinyl Chloride	4.1	8.6	10	22
1,3-Butadiene	4.1	Not Detected	9.1	Not Detected
Bromomethane	4.1	Not Detected	16	Not Detected
Chloroethane	4.1	Not Detected	11	Not Detected
Freon 11	4.1	Not Detected	23	Not Detected
Ethanol	16	1400	31	2700
Freon 113	4.1	Not Detected	31	Not Detected
1,1-Dichloroethene	4.1	Not Detected	16	Not Detected
Acetone	16	170	39	400
2-Propanol	16	95	40	230
Carbon Disulfide	4.1	10	13	33
3-Chloropropene	16	Not Detected	51	Not Detected
Methylene Chloride	4.1	Not Detected	14	Not Detected
Methyl tert-butyl ether	4.1	Not Detected	15	Not Detected
trans-1,2-Dichloroethene	4.1	Not Detected	16	Not Detected
Hexane	4.1	220	14	770
1,1-Dichloroethane	4.1	Not Detected	16	Not Detected
2-Butanone (Methyl Ethyl Ketone)	4.1	7.4	12	22
cis-1,2-Dichloroethene	4.1	22	16	89
Tetrahydrofuran	4.1	Not Detected	12	Not Detected
Chloroform	4.1	Not Detected	20	Not Detected
1,1,1-Trichloroethane	4.1	Not Detected	22	Not Detected
Cyclohexane	4.1	170	14	580
Carbon Tetrachloride	4.1	Not Detected	26	Not Detected
2,2,4-Trimethylpentane	4.1	320	19	1500
Benzene	4.1	15	13	48
1,2-Dichloroethane	4.1	Not Detected	16	Not Detected
Heptane	4.1	180	17	740
Trichloroethene	4.1	4.1	22	22
1,2-Dichloropropane	4.1	Not Detected	19	Not Detected
1,4-Dioxane	16	Not Detected	59	Not Detected
Bromodichloromethane	4.1	Not Detected	27	Not Detected
cis-1,3-Dichloropropene	4.1	Not Detected	19	Not Detected
4-Methyl-2-pentanone	4.1	Not Detected	17	Not Detected
Toluene	4.1	20	15	74
trans-1,3-Dichloropropene	4.1	Not Detected	19	Not Detected
1,1,2-Trichloroethane	4.1	Not Detected	22	Not Detected
Tetrachloroethene	4.1	Not Detected	28	Not Detected
2-Hexanone	16	Not Detected	67	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 18 Bag 5-L

Lab ID#: 0601222A-02A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011813	Date of Collection:	1/10/06
Dil. Factor:	8.20	Date of Analysis:	1/18/06 08:01 PM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	4.1	Not Detected	35	Not Detected
1,2-Dibromoethane (EDB)	4.1	Not Detected	32	Not Detected
Chlorobenzene	4.1	Not Detected	19	Not Detected
Ethyl Benzene	4.1	Not Detected	18	Not Detected
m,p-Xylene	4.1	7.0	18	30
o-Xylene	4.1	Not Detected	18	Not Detected
Styrene	4.1	Not Detected	17	Not Detected
Bromoform	4.1	Not Detected	42	Not Detected
Cumene	4.1	29	20	140
1,1,2,2-Tetrachloroethane	4.1	Not Detected	28	Not Detected
Propylbenzene	4.1	Not Detected	20	Not Detected
4-Ethyltoluene	4.1	Not Detected	20	Not Detected
1,3,5-Trimethylbenzene	4.1	Not Detected	20	Not Detected
1,2,4-Trimethylbenzene	4.1	Not Detected	20	Not Detected
1,3-Dichlorobenzene	4.1	Not Detected	25	Not Detected
1,4-Dichlorobenzene	4.1	Not Detected	25	Not Detected
alpha-Chlorotoluene	4.1	Not Detected	21	Not Detected
1,2-Dichlorobenzene	4.1	Not Detected	25	Not Detected
1,2,4-Trichlorobenzene	16	Not Detected	120	Not Detected
Hexachlorobutadiene	16	Not Detected	170	Not Detected

Container Type: 5 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	111	70-130
4-Bromofluorobenzene	107	70-130

AIR TOXICS LTD.

Client Sample ID: No. 9 Bag 5-L

Lab ID#: 0601222A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011821	Date of Collection:	1/10/06
Dil. Factor:	11.7	Date of Analysis:	1/19/06 02:43 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	5.8	Not Detected	29	Not Detected
Freon 114	5.8	110	41	790
Chloromethane	23	Not Detected	48	Not Detected
Vinyl Chloride	5.8	12	15	32
1,3-Butadiene	5.8	Not Detected	13	Not Detected
Bromomethane	5.8	Not Detected	23	Not Detected
Chloroethane	5.8	12 J	15	31 J
Freon 11	5.8	Not Detected	33	Not Detected
Ethanol	23	1400	44	2700
Freon 113	5.8	Not Detected	45	Not Detected
1,1-Dichloroethene	5.8	Not Detected	23	Not Detected
Acetone	23	110	56	270
2-Propanol	23	120	58	300
Carbon Disulfide	5.8	Not Detected	18	Not Detected
3-Chloropropene	23	Not Detected	73	Not Detected
Methylene Chloride	5.8	Not Detected	20	Not Detected
Methyl tert-butyl ether	5.8	12 J	21	44 J
trans-1,2-Dichloroethene	5.8	Not Detected	23	Not Detected
Hexane	5.8	330	21	1200
1,1-Dichloroethane	5.8	Not Detected	24	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	6.0	17	18
cis-1,2-Dichloroethene	5.8	32	23	130
Tetrahydrofuran	5.8	Not Detected	17	Not Detected
Chloroform	5.8	Not Detected	28	Not Detected
1,1,1-Trichloroethane	5.8	Not Detected	32	Not Detected
Cyclohexane	5.8	270	20	920
Carbon Tetrachloride	5.8	Not Detected	37	Not Detected
2,2,4-Trimethylpentane	5.8	320	27	1500
Benzene	5.8	44	19	140
1,2-Dichloroethane	5.8	Not Detected	24	Not Detected
Heptane	5.8	220	24	900
Trichloroethene	5.8	6.1	31	33
1,2-Dichloropropane	5.8	Not Detected	27	Not Detected
1,4-Dioxane	23	Not Detected	84	Not Detected
Bromodichloromethane	5.8	Not Detected	39	Not Detected
cis-1,3-Dichloropropene	5.8	Not Detected	26	Not Detected
4-Methyl-2-pentanone	5.8	Not Detected	24	Not Detected
Toluene	5.8	22	22	84
trans-1,3-Dichloropropene	5.8	Not Detected	26	Not Detected
1,1,2-Trichloroethane	5.8	Not Detected	32	Not Detected
Tetrachloroethene	5.8	Not Detected	40	Not Detected
2-Hexanone	23	Not Detected	96	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 9 Bag 5-L

Lab ID#: 0601222A-03A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011821	Date of Collection:	1/10/06
Dil. Factor:	11.7	Date of Analysis:	1/19/06 02:43 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	5.8	Not Detected	50	Not Detected
1,2-Dibromoethane (EDB)	5.8	Not Detected	45	Not Detected
Chlorobenzene	5.8	Not Detected	27	Not Detected
Ethyl Benzene	5.8	12	25	51
m,p-Xylene	5.8	12	25	50
o-Xylene	5.8	Not Detected	25	Not Detected
Styrene	5.8	Not Detected	25	Not Detected
Bromoform	5.8	Not Detected	60	Not Detected
Cumene	5.8	26	29	130
1,1,2,2-Tetrachloroethane	5.8	Not Detected	40	Not Detected
Propylbenzene	5.8	Not Detected	29	Not Detected
4-Ethyltoluene	5.8	Not Detected	29	Not Detected
1,3,5-Trimethylbenzene	5.8	Not Detected	29	Not Detected
1,2,4-Trimethylbenzene	5.8	Not Detected	29	Not Detected
1,3-Dichlorobenzene	5.8	Not Detected	35	Not Detected
1,4-Dichlorobenzene	5.8	Not Detected	35	Not Detected
alpha-Chlorotoluene	5.8	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.8	Not Detected	35	Not Detected
1,2,4-Trichlorobenzene	23	Not Detected	170	Not Detected
Hexachlorobutadiene	23	Not Detected	250	Not Detected

J = Estimated value due to bias in the CCV.

Container Type: 5 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	111	70-130
4-Bromofluorobenzene	106	70-130

AIR TOXICS LTD.

Client Sample ID: No. 20 Bag 1-L

Lab ID#: 0601222A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011822	Date of Collection:	1/10/06
Dil. Factor:	11.7	Date of Analysis:	1/19/06 03:24 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	5.8	Not Detected	29	Not Detected
Freon 114	5.8	41	41	290
Chloromethane	23	Not Detected	48	Not Detected
Vinyl Chloride	5.8	16	15	40
1,3-Butadiene	5.8	Not Detected	13	Not Detected
Bromomethane	5.8	Not Detected	23	Not Detected
Chloroethane	5.8	18 J	15	48 J
Freon 11	5.8	Not Detected	33	Not Detected
Ethanol	23	1800	44	3400
Freon 113	5.8	Not Detected	45	Not Detected
1,1-Dichloroethene	5.8	Not Detected	23	Not Detected
Acetone	23	160	56	380
2-Propanol	23	120	58	300
Carbon Disulfide	5.8	8.8	18	28
3-Chloropropene	23	Not Detected	73	Not Detected
Methylene Chloride	5.8	Not Detected	20	Not Detected
Methyl tert-butyl ether	5.8	7.9 J	21	28 J
trans-1,2-Dichloroethene	5.8	Not Detected	23	Not Detected
Hexane	5.8	470	21	1600
1,1-Dichloroethane	5.8	Not Detected	24	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.8	8.9	17	26
cis-1,2-Dichloroethene	5.8	39	23	150
Tetrahydrofuran	5.8	Not Detected	17	Not Detected
Chloroform	5.8	Not Detected	28	Not Detected
1,1,1-Trichloroethane	5.8	Not Detected	32	Not Detected
Cyclohexane	5.8	240	20	840
Carbon Tetrachloride	5.8	Not Detected	37	Not Detected
2,2,4-Trimethylpentane	5.8	450	27	2100
Benzene	5.8	32	19	100
1,2-Dichloroethane	5.8	Not Detected	24	Not Detected
Heptane	5.8	320	24	1300
Trichloroethene	5.8	9.2	31	50
1,2-Dichloropropane	5.8	Not Detected	27	Not Detected
1,4-Dioxane	23	Not Detected	84	Not Detected
Bromodichloromethane	5.8	Not Detected	39	Not Detected
cis-1,3-Dichloropropene	5.8	Not Detected	26	Not Detected
4-Methyl-2-pentanone	5.8	Not Detected	24	Not Detected
Toluene	5.8	30	22	110
trans-1,3-Dichloropropene	5.8	Not Detected	26	Not Detected
1,1,2-Trichloroethane	5.8	Not Detected	32	Not Detected
Tetrachloroethene	5.8	Not Detected	40	Not Detected
2-Hexanone	23	Not Detected	96	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 20 Bag 1-L

Lab ID#: 0601222A-04A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011822	Date of Collection:	1/10/06
Dil. Factor:	11.7	Date of Analysis:	1/19/06 03:24 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	5.8	Not Detected	50	Not Detected
1,2-Dibromoethane (EDB)	5.8	Not Detected	45	Not Detected
Chlorobenzene	5.8	Not Detected	27	Not Detected
Ethyl Benzene	5.8	Not Detected	25	Not Detected
m,p-Xylene	5.8	7.8	25	34
o-Xylene	5.8	Not Detected	25	Not Detected
Styrene	5.8	Not Detected	25	Not Detected
Bromoform	5.8	Not Detected	60	Not Detected
Cumene	5.8	26	29	130
1,1,2,2-Tetrachloroethane	5.8	Not Detected	40	Not Detected
Propylbenzene	5.8	Not Detected	29	Not Detected
4-Ethyltoluene	5.8	Not Detected	29	Not Detected
1,3,5-Trimethylbenzene	5.8	Not Detected	29	Not Detected
1,2,4-Trimethylbenzene	5.8	Not Detected	29	Not Detected
1,3-Dichlorobenzene	5.8	Not Detected	35	Not Detected
1,4-Dichlorobenzene	5.8	Not Detected	35	Not Detected
alpha-Chlorotoluene	5.8	Not Detected	30	Not Detected
1,2-Dichlorobenzene	5.8	Not Detected	35	Not Detected
1,2,4-Trichlorobenzene	23	Not Detected	170	Not Detected
Hexachlorobutadiene	23	Not Detected	250	Not Detected

J = Estimated value due to bias in the CCV.

Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	110	70-130
4-Bromofluorobenzene	106	70-130

AIR TOXICS LTD.

Client Sample ID: No. 2 Bag 1-L

Lab ID#: 0601222A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011823	Date of Collection:	1/10/06
Dil. Factor:	8.08	Date of Analysis:	1/19/06 04:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	4.0	Not Detected	20	Not Detected
Freon 114	4.0	28	28	200
Chloromethane	16	Not Detected	33	Not Detected
Vinyl Chloride	4.0	21	10	53
1,3-Butadiene	4.0	Not Detected	8.9	Not Detected
Bromomethane	4.0	Not Detected	16	Not Detected
Chloroethane	4.0	16 J	11	41 J
Freon 11	4.0	Not Detected	23	Not Detected
Ethanol	16	2500 E	30	4700 E
Freon 113	4.0	Not Detected	31	Not Detected
1,1-Dichloroethene	4.0	Not Detected	16	Not Detected
Acetone	16	33	38	78
2-Propanol	16	150	40	360
Carbon Disulfide	4.0	8.3	12	26
3-Chloropropene	16	Not Detected	50	Not Detected
Methylene Chloride	4.0	6.0	14	21
Methyl tert-butyl ether	4.0	5.0 J	14	18 J
trans-1,2-Dichloroethene	4.0	Not Detected	16	Not Detected
Hexane	4.0	370	14	1300
1,1-Dichloroethane	4.0	7.0	16	28
2-Butanone (Methyl Ethyl Ketone)	4.0	4.8	12	14
cis-1,2-Dichloroethene	4.0	55	16	220
Tetrahydrofuran	4.0	40	12	120
Chloroform	4.0	Not Detected	20	Not Detected
1,1,1-Trichloroethane	4.0	Not Detected	22	Not Detected
Cyclohexane	4.0	170	14	580
Carbon Tetrachloride	4.0	Not Detected	25	Not Detected
2,2,4-Trimethylpentane	4.0	200	19	930
Benzene	4.0	64	13	200
1,2-Dichloroethane	4.0	Not Detected	16	Not Detected
Heptane	4.0	250	16	1000
Trichloroethene	4.0	7.6	22	41
1,2-Dichloropropane	4.0	Not Detected	19	Not Detected
1,4-Dioxane	16	Not Detected	58	Not Detected
Bromodichloromethane	4.0	Not Detected	27	Not Detected
cis-1,3-Dichloropropene	4.0	Not Detected	18	Not Detected
4-Methyl-2-pentanone	4.0	Not Detected	16	Not Detected
Toluene	4.0	20	15	74
trans-1,3-Dichloropropene	4.0	Not Detected	18	Not Detected
1,1,2-Trichloroethane	4.0	Not Detected	22	Not Detected
Tetrachloroethene	4.0	Not Detected	27	Not Detected
2-Hexanone	16	Not Detected	66	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 2 Bag 1-L

Lab ID#: 0601222A-05A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011823	Date of Collection:	1/10/06
Dil. Factor:	8.08	Date of Analysis:	1/19/06 04:04 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	4.0	Not Detected	34	Not Detected
1,2-Dibromoethane (EDB)	4.0	Not Detected	31	Not Detected
Chlorobenzene	4.0	Not Detected	18	Not Detected
Ethyl Benzene	4.0	10	18	43
m,p-Xylene	4.0	8.5	18	37
o-Xylene	4.0	4.2	18	18
Styrene	4.0	Not Detected	17	Not Detected
Bromoform	4.0	Not Detected	42	Not Detected
Cumene	4.0	22	20	110
1,1,2,2-Tetrachloroethane	4.0	Not Detected	28	Not Detected
Propylbenzene	4.0	Not Detected	20	Not Detected
4-Ethyltoluene	4.0	Not Detected	20	Not Detected
1,3,5-Trimethylbenzene	4.0	Not Detected	20	Not Detected
1,2,4-Trimethylbenzene	4.0	Not Detected	20	Not Detected
1,3-Dichlorobenzene	4.0	Not Detected	24	Not Detected
1,4-Dichlorobenzene	4.0	Not Detected	24	Not Detected
alpha-Chlorotoluene	4.0	Not Detected	21	Not Detected
1,2-Dichlorobenzene	4.0	Not Detected	24	Not Detected
1,2,4-Trichlorobenzene	16	Not Detected	120	Not Detected
Hexachlorobutadiene	16	Not Detected	170	Not Detected

J = Estimated value due to bias in the CCV.
E = Exceeds instrument calibration range.
Container Type: 1 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	98	70-130
1,2-Dichloroethane-d4	108	70-130
4-Bromofluorobenzene	107	70-130

AIR TOXICS LTD.

Client Sample ID: No. 14 Bag 3-L

Lab ID#: 0601222A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011824	Date of Collection:	1/10/06
Dil. Factor:	10.6	Date of Analysis:	1/19/06 04:52 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	5.3	Not Detected	26	Not Detected
Freon 114	5.3	35	37	240
Chloromethane	21	Not Detected	44	Not Detected
Vinyl Chloride	5.3	14	14	36
1,3-Butadiene	5.3	Not Detected	12	Not Detected
Bromomethane	5.3	Not Detected	20	Not Detected
Chloroethane	5.3	24 J	14	63 J
Freon 11	5.3	Not Detected	30	Not Detected
Ethanol	21	62	40	120
Freon 113	5.3	Not Detected	41	Not Detected
1,1-Dichloroethene	5.3	Not Detected	21	Not Detected
Acetone	21	38	50	91
2-Propanol	21	33	52	82
Carbon Disulfide	5.3	5.6	16	17
3-Chloropropene	21	Not Detected	66	Not Detected
Methylene Chloride	5.3	460	18	1600
Methyl tert-butyl ether	5.3	5.8 J	19	21 J
trans-1,2-Dichloroethene	5.3	Not Detected	21	Not Detected
Hexane	5.3	560	19	2000
1,1-Dichloroethane	5.3	Not Detected	21	Not Detected
2-Butanone (Methyl Ethyl Ketone)	5.3	7.7	16	23
cis-1,2-Dichloroethene	5.3	22	21	88
Tetrahydrofuran	5.3	30	16	90
Chloroform	5.3	Not Detected	26	Not Detected
1,1,1-Trichloroethane	5.3	Not Detected	29	Not Detected
Cyclohexane	5.3	240	18	840
Carbon Tetrachloride	5.3	Not Detected	33	Not Detected
2,2,4-Trimethylpentane	5.3	260	25	1200
Benzene	5.3	40	17	130
1,2-Dichloroethane	5.3	Not Detected	21	Not Detected
Heptane	5.3	270	22	1100
Trichloroethene	5.3	12	28	62
1,2-Dichloropropane	5.3	Not Detected	24	Not Detected
1,4-Dioxane	21	Not Detected	76	Not Detected
Bromodichloromethane	5.3	Not Detected	36	Not Detected
cis-1,3-Dichloropropene	5.3	Not Detected	24	Not Detected
4-Methyl-2-pentanone	5.3	Not Detected	22	Not Detected
Toluene	5.3	28	20	100
trans-1,3-Dichloropropene	5.3	Not Detected	24	Not Detected
1,1,2-Trichloroethane	5.3	Not Detected	29	Not Detected
Tetrachloroethene	5.3	Not Detected	36	Not Detected
2-Hexanone	21	Not Detected	87	Not Detected

AIR TOXICS LTD.

Client Sample ID: No. 14 Bag 3-L

Lab ID#: 0601222A-06A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011824	Date of Collection:	1/10/06
Dil. Factor:	10.6	Date of Analysis:	1/19/06 04:52 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	5.3	Not Detected	45	Not Detected
1,2-Dibromoethane (EDB)	5.3	Not Detected	41	Not Detected
Chlorobenzene	5.3	Not Detected	24	Not Detected
Ethyl Benzene	5.3	27	23	120
m,p-Xylene	5.3	21	23	93
o-Xylene	5.3	13	23	55
Styrene	5.3	Not Detected	22	Not Detected
Bromoform	5.3	Not Detected	55	Not Detected
Cumene	5.3	50	26	250
1,1,2,2-Tetrachloroethane	5.3	Not Detected	36	Not Detected
Propylbenzene	5.3	Not Detected	26	Not Detected
4-Ethyltoluene	5.3	Not Detected	26	Not Detected
1,3,5-Trimethylbenzene	5.3	Not Detected	26	Not Detected
1,2,4-Trimethylbenzene	5.3	10	26	50
1,3-Dichlorobenzene	5.3	Not Detected	32	Not Detected
1,4-Dichlorobenzene	5.3	Not Detected	32	Not Detected
alpha-Chlorotoluene	5.3	Not Detected	27	Not Detected
1,2-Dichlorobenzene	5.3	Not Detected	32	Not Detected
1,2,4-Trichlorobenzene	21	Not Detected	160	Not Detected
Hexachlorobutadiene	21	Not Detected	230	Not Detected

J = Estimated value due to bias in the CCV.

Container Type: 3 Liter Tedlar Bag

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	107	70-130
4-Bromofluorobenzene	105	70-130

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0601222A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011805	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/18/06 01:52 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	2.0	Not Detected	4.1	Not Detected
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	0.50	Not Detected	1.9	Not Detected
Chloroethane	0.50	Not Detected	1.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	2.0	Not Detected	4.8	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	0.50	Not Detected	1.6	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	0.50	Not Detected	1.7	Not Detected
Methyl tert-butyl ether	0.50	Not Detected	1.8	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	0.50	Not Detected	1.5	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0601222A-07A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011805	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/18/06 01:52 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.50	Not Detected	2.1	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	110	70-130

AIR TOXICS LTD.

Client Sample ID: CCV

Lab ID#: 0601222A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011802	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/18/06 10:34 AM	

Compound	%Recovery
Freon 12	124
Freon 114	119
Chloromethane	108
Vinyl Chloride	106
1,3-Butadiene	86
Bromomethane	111
Chloroethane	134 Q
Freon 11	122
Ethanol	100
Freon 113	109
1,1-Dichloroethene	107
Acetone	91
2-Propanol	106
Carbon Disulfide	92
3-Chloropropene	99
Methylene Chloride	111
Methyl tert-butyl ether	131 Q
trans-1,2-Dichloroethene	94
Hexane	91
1,1-Dichloroethane	107
2-Butanone (Methyl Ethyl Ketone)	108
cis-1,2-Dichloroethene	110
Tetrahydrofuran	108
Chloroform	107
1,1,1-Trichloroethane	111
Cyclohexane	98
Carbon Tetrachloride	117
2,2,4-Trimethylpentane	102
Benzene	98
1,2-Dichloroethane	118
Heptane	99
Trichloroethene	107
1,2-Dichloropropane	104
1,4-Dioxane	98
Bromodichloromethane	106
cis-1,3-Dichloropropene	94
4-Methyl-2-pentanone	104
Toluene	99
trans-1,3-Dichloropropene	103
1,1,2-Trichloroethane	96
Tetrachloroethene	104
2-Hexanone	88

AIR TOXICS LTD.

Client Sample ID: CCV

Lab ID#: 0601222A-08A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011802	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/18/06 10:34 AM	

Compound	%Recovery
Dibromochloromethane	99
1,2-Dibromoethane (EDB)	93
Chlorobenzene	95
Ethyl Benzene	93
m,p-Xylene	92
o-Xylene	89
Styrene	105
Bromoform	102
Cumene	89
1,1,2,2-Tetrachloroethane	87
Propylbenzene	88
4-Ethyltoluene	94
1,3,5-Trimethylbenzene	81
1,2,4-Trimethylbenzene	80
1,3-Dichlorobenzene	88
1,4-Dichlorobenzene	82
alpha-Chlorotoluene	76
1,2-Dichlorobenzene	84
1,2,4-Trichlorobenzene	98
Hexachlorobutadiene	102

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	105	70-130
1,2-Dichloroethane-d4	105	70-130
4-Bromofluorobenzene	108	70-130

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011803	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis:	1/18/06 11:28 AM

Compound	%Recovery
Freon 12	107
Freon 114	102
Chloromethane	104
Vinyl Chloride	90
1,3-Butadiene	102
Bromomethane	104
Chloroethane	118
Freon 11	105
Ethanol	86
Freon 113	102
1,1-Dichloroethene	96
Acetone	102
2-Propanol	104
Carbon Disulfide	104
3-Chloropropene	104
Methylene Chloride	100
Methyl tert-butyl ether	136
trans-1,2-Dichloroethene	101
Hexane	97
1,1-Dichloroethane	98
2-Butanone (Methyl Ethyl Ketone)	119
cis-1,2-Dichloroethene	127
Tetrahydrofuran	111
Chloroform	98
1,1,1-Trichloroethane	96
Cyclohexane	102
Carbon Tetrachloride	100
2,2,4-Trimethylpentane	103
Benzene	91
1,2-Dichloroethane	110
Heptane	107
Trichloroethene	99
1,2-Dichloropropane	98
1,4-Dioxane	103
Bromodichloromethane	112
cis-1,3-Dichloropropene	100
4-Methyl-2-pentanone	113
Toluene	100
trans-1,3-Dichloropropene	108
1,1,2-Trichloroethane	94
Tetrachloroethene	104
2-Hexanone	89

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222A-09A

MODIFIED EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	1011803	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/18/06 11:28 AM	

Compound	%Recovery
Dibromochloromethane	105
1,2-Dibromoethane (EDB)	99
Chlorobenzene	92
Ethyl Benzene	94
m,p-Xylene	97
o-Xylene	89
Styrene	114
Bromoform	101
Cumene	76
1,1,2,2-Tetrachloroethane	79
Propylbenzene	82
4-Ethyltoluene	84
1,3,5-Trimethylbenzene	74
1,2,4-Trimethylbenzene	77
1,3-Dichlorobenzene	76
1,4-Dichlorobenzene	74
alpha-Chlorotoluene	70
1,2-Dichlorobenzene	69 Q
1,2,4-Trichlorobenzene	66 Q
Hexachlorobutadiene	73

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	106	70-130
4-Bromofluorobenzene	109	70-130

@ AIR TOXICS LTD.
AN ENVIRONMENTAL ANALYTICAL LABORATORY

WORK ORDER #: 0601222D

Work Order Summary

CLIENT:	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way Suite 100 Long Beach, CA 90806-6816	**BILL TO:**	Mr. Benny Benson SCS Engineers 3900 Kilroy Airport Way Suite 100 Long Beach, CA 90806-6816
PHONE:	562-426-9544	**P.O. #**	06-1126
FAX:	562-988-3183	**PROJECT #**	Kekaha Landfill
DATE RECEIVED:	01/13/2006	**CONTACT:**	Kyle Vagadori
DATE COMPLETED:	01/25/2006		

FRACTION #	NAME	TEST
01AB	#14 A + B vials	Siloxanes
02AB	#21 A + B vials	Siloxanes
03A	Lab Blank	Siloxanes
04A	LCS	Siloxanes

CERTIFIED BY: Linda J. Fruman

Laboratory Director

DATE: 01/25/06

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

LABORATORY NARRATIVE
Siloxanes
SCS Engineers
Workorder# 0601222D

Four Vial samples were received on January 13, 2006. The laboratory performed analysis for siloxanes by GC/MS. A sample volume of 1.0 uL was injected directly onto the GC column. Initial results are in ug/mL. The units are converted to total micrograms (ug) by multiplying the result (ug/mL) by the total volume (mL) contained in the impinger. See the data sheets for the reporting limits for each compound.

Receiving Notes

A Temperature Blank was included with the shipment. The temperature was measured and was not within 4 ± 2°C. Coolant in the form of blue ice was present. Internal stability studies at Air Toxics Ltd. indicate Siloxane compounds may be stable for up to five days from collection at room temperature. The discrepancy was noted in the Sample Receipt Confirmation email/fax and the analysis proceeded.

Analytical Notes

Impinger volumes were measured at the laboratory using a graduated cylinder and documented in the analytical logbook.

A front and back impinger was received for each sample. Each impinger was analyzed separately. The results for each analyte were then additively combined and reported as a single concentration. The reported surrogate recovery is derived from the front impinger analysis only.

Sampling volume was supplied by the client. A sample volume of 30 liters was assumed for all QC samples.

Definition of Data Qualifying Flags

Six qualifiers may have been used on the data analysis sheets and indicate as follows:
B - Compound present in laboratory blank greater than reporting limit.
J - Estimated Value.
E - Exceeds instrument calibration range.
S - Saturated peak.
Q - Exceeds quality control limits.
M - Reported value may be biased due to apparent matrix interferences.

File extensions may have been used on the data analysis sheets and indicates as follows:
a-File was requantified
b-File was quantified by a second column and detector
r1-File was requantified for the purpose of reissue

AIR TOXICS LTD.

Client Sample ID: #14 A + B vials

Lab ID#: 0601222D-01AB

SILOXANES - GC/MS

File Name:	k011334	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/14/06 01:30 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Octamethylcyclotetrasiloxane (D4)	74	Not Detected	900	Not Detected
Decamethylcylopentasiloxane (D5)	59	Not Detected	900	Not Detected
Dodecamethylcyclohexasiloxane (D6)	98	Not Detected	1800	Not Detected
Hexamethyldisiloxane	130	Not Detected	900	Not Detected
Octamethyltrisiloxane	92	Not Detected	900	Not Detected

Air Sample Volume(L): 31.5
Impinger Total Volume(mL): 28.2

Container Type: Vial

Surrogates	%Recovery	Method Limits
Hexamethyl disiloxane -d18	98	70-130

AIR TOXICS LTD.

Client Sample ID: #21 A + B vials

Lab ID#: 0601222D-02AB

SILOXANES - GC/MS

File Name:	k011336	Date of Collection:	1/10/06
Dil. Factor:	1.00	Date of Analysis:	1/14/06 02:18 AM

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Octamethylcyclotetrasiloxane (D4)	79	Not Detected	960	Not Detected
Decamethylcylopentasiloxane (D5)	63	Not Detected	960	Not Detected
Dodecamethylcyclohexasiloxane (D6)	100	Not Detected	1900	Not Detected
Hexamethyldisiloxane	140	Not Detected	960	Not Detected
Octamethyltrisiloxane	99	Not Detected	960	Not Detected

Air Sample Volume(L): 29.1
Impinger Total Volume(mL): 27.8

Container Type: Vial

Surrogates	%Recovery	Method Limits
Hexamethyl disiloxane -d18	99	70-130

AIR TOXICS LTD.

Client Sample ID: Lab Blank

Lab ID#: 0601222D-03A

SILOXANES - GC/MS

File Name:	k011327	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 10:40 PM	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (uG/m3)	Amount (uG/m3)
Octamethylcyclotetrasiloxane (D4)	2.7	Not Detected	33	Not Detected
Decamethylcylopentasiloxane (D5)	2.2	Not Detected	33	Not Detected
Dodecamethylcyclohexasiloxane (D6)	3.7	Not Detected	67	Not Detected
Hexamethyldisiloxane	5.0	Not Detected	33	Not Detected
Octamethyltrisiloxane	3.4	Not Detected	33	Not Detected

Air Sample Volume(L): 30.0
Impinger Total Volume(mL): 1.00

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Hexamethyl disiloxane -d18	110	70-130

AIR TOXICS LTD.

Client Sample ID: LCS

Lab ID#: 0601222D-04A

SILOXANES - GC/MS

File Name:	k011326	Date of Collection: NA	
Dil. Factor:	1.00	Date of Analysis: 1/13/06 10:16 PM	

Compound	%Recovery
Octamethylcyclotetrasiloxane (D4)	115
Decamethylcylopentasiloxane (D5)	115
Dodecamethylcyclohexasiloxane (D6)	Not Spiked
Hexamethyldisiloxane	92
Octamethyltrisiloxane	114

Air Sample Volume(L): 30.0
Impinger Total Volume(mL): 1.00

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Hexamethyl disiloxane -d18	110	70-130